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Annual Report

OF THE

Department of Agriculture and Immigration

OF THE

PROVINCE OF MANITOBA

For the Fiscal Year Ending
November 30th, 1920

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Report of Manitoba Agricultural College
Printed as separate Volume

Printed by Order of the Legislature of Manitoba

WINNIPEG, MANITOBA

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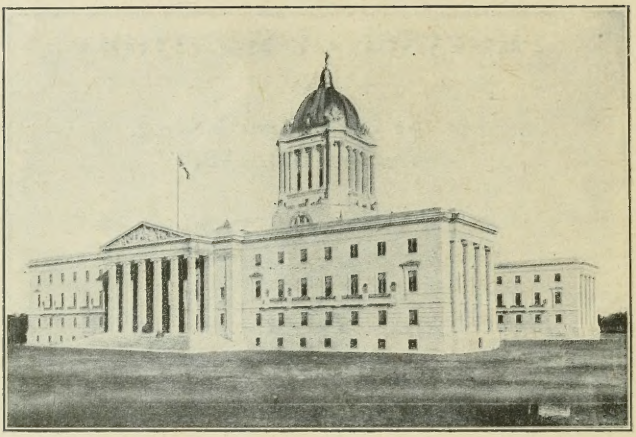


Parliament Building, Winnipeg

To His Honor Sir James Albert Manning Aikins,
Knight Bachelor,

Lieutenant-Governor of the Province of Manitoba.

May it please Your Honor:

The undersigned has the honor to submit the report of the Department of Agriculture and Immigration for the fiscal year ending November 30th, 1920.

Respectfully submitted,

GEO. H. MALCOLM,
Minister of Agriculture and Immigration

Pleasant Bits of Manitoba Scenery

Hon. Geo. H. Malcolm

MINISTER OF AGRICULTURE
AND IMMIGRATION

Divisions of Report

Printed Herewith:—

Report of Deputy Minister.
Report of Dairy Commissioner.
Report of Weeds Commission.
Report of Live Stock Commissioner.
Report on Operations under the "Settlers' Animal Purchase Act".
Report of Publications Branch.
Report of Demonstration Farms Board.
Report of Employment Service of Canada.
Report of Game Branch.
Report on Operations under the Co-operative Associations Act.
Report of Agricultural Extension Service.

Printed Under Separate Cover :—

Report of Manitoba Agricultural College.

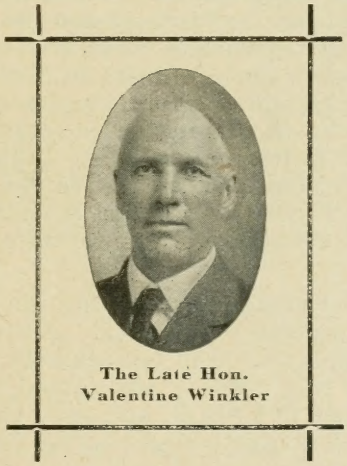
Report of the Deputy Minister

Hon. Geo. H. Malcolm,
Minister of Agriculture and Immigration.

Sir:—I have the honor to submit herewith the annual report of the various branches of the Department of Agriculture and Immigration for the fiscal year ending November 30th, 1920. In addition to the account given of the activities of the Department during the year, this report also indicates any changes in the administrative branches.

Tribute

The sudden and unexpected departure of our much respected and esteemed Minister of Agriculture and Immigration, the late Honourable Valentine Winkler, was keenly felt by every member of the staff of the Department, as well as by the farmers and citizens of the Department, as well as by the farmers and citizens of the Province generally. We were accustomed to regard him more as a friend and counsellor, rather than as the authoritative head of the Department. Some of the policies inaugurated by him will keep his name fresh in the memories of the farmers of this province for generations to come. The "Winkler cow scheme" will long be remembered as having been responsible for the converting into happy homes of many a dreary homestead in the inter-lake territory north of Winnipeg. His deeds will long outlive him.



The Late Hon. Valentine Winkler

We take this opportunity of welcoming in you, Sir, a worthy successor to the portfolio of Agriculture and Immigration. Manitoba's agriculture is in the transition period, and the agricultural situation presents a rare opportunity for a constructive policy to lay the foundation for a permanent and prosperous agriculture.

General.

Manitoba has enjoyed a reasonably prosperous year. While yields of cereals—due to drought, grasshoppers, rust and weeds—were reduced to slightly below the ten year average, the general complexion of our agriculture is healthy, and prospects are good for the future.

Live stock prices have sought lower levels, particularly toward the fall of the year and for the poorer classes of live stock. Last

winter was a severe one and feed was scarce in some districts. A great deal of hay was shipped out of Manitoba to Alberta, which left us short for the balance of the winter, and many farmers who had sold what they thought to be a surplus of hay were, later on, owing to the prolonged winter, forced to purchase supplies for their own needs at double the price received for the hay which they had sold. Our Department imported some forty carloads of first-class timothy from Ontario, which found satisfied customers. The quality was excellent, and the hay was absolutely free from weeds. It is estimated that thousands of acres would have remained uncropped had not the farmers been supplied with hay. A great deal of hay was imported from the United States, and prices ranged from $35.00 to $50.00 per ton, which made expensive feeding. Some of the live stock fed on this expensive hay were disposed of in the fall at prices far short of repaying the farmer's cost of keeping these animals.

Relief Measures.

Early in the winter a conference was held in Winnipeg between representatives of the Departments of Agriculture of the provinces in the West, the Dominion Government and the railroad companies, and, as a result, freight privileges were arranged for the removal of feed and live stock. Certain areas in Manitoba were granted this privilege of free freight for feed, the cost of carrying the feed being borne equally by the Dominion Government, the Provincial Government and the railway companies. While the area affected in Manitoba was restricted, and the cost correspondingly small, the arrangement was well justified and met a serious need. This free freight was of great assistance to the farmers, and it was greatly appreciated.

A policy was also inaugurated by our Department to care for farmers unable to purchase this feed. Assistance was given through the municipalities. The Government arranged a loan to the municipality for this purpose and agreed to extend credit for a period not to exceed five years, and then to absorb one-half of any loss which the municipality might suffer from the undertaking.

Seasonal Conditions.

Winter carried on well into April. In reality, there was no spring, as we ordinarily understand the term and the season of the year which it designates. Immediately we commenced seeding, we had summer weather and growth was phenomenal. Grass came along very quickly, rains were forthcoming and prospects were cheerful. Later, drought set in in some districts and the crop outlook became problematic. This drought, accompanied by hot winds, caused deep concern over the crop prospect, and in some areas calamity howlers wailed blue ruin. These unfavorable reports were heralded by the press in sections of the United States from which it was feared Manitoba's fair name brought too many farmer immigrants to our midst. At one time these papers had Manitoba's yield of wheat placed at one bushel per acre. Needless to state,

distorted and exaggerated reports of this nature far more than offset any national efforts made along immigration lines and, if at all widespread and believed, would materially affect land values in our province without the slightest foundation in fact. Manitoba has never known a complete crop failure in her history and well merits the use of the slogan, "The Sure Crop Province."

Soil Survey.

Partial crop failures in small areas have periodically occurred of late years. The slight investigations already made would indicate that there are very basic reasons responsible for the reduced yields. While attributing a fair proportion of the cause to climatic conditions and to unsuitable tillage methods, there are still factors to contend with which have arisen as a result of prolonged cropping by one kind of crop. Agricultural experience the world over has demonstrated that no farmer can continue indefinitely the process of displacing without making some provision for replacing. While lack of rainfall is regarded in some districts as the reason for low yields, and as being also responsible for excessive soil drifting, the basic reason for the latter, on reasonably desirable soil, is the absence of vegetable matter, which is also a factor in the reduction of the yield, even where moisture has been more plentiful.

To discuss the pros and cons of this whole question of the depletion of soil fertility and the physical defects of the soil due to the present system of cropping, is a fit subject for a large volume, rather than a matter to be dealt with in a brief report. Suffice it to state that the time has arrived when an immediate diagnosis of the whole problem should take place. A policy has been adopted whereby an extensive, as well as intensive, agricultural survey will be made of the whole province. This work will be undertaken by a competent staff under the direction of President John Bracken, of the Agricultural College. The accumulated data will prove invaluable for educational work at the College, will serve as a basis for working out a more permanent and profitable system of farming, will supply information to incoming settlers, and will eliminate a great deal of national waste and inefficiency. Our great and pressing problem is to fit an agriculture to our conditions and not expect that our conditions will admit of the importation of an agricultural practice which may happen to have worked out admirably elsewhere.

Law Enforcement.

The inauguration of the law enforcement branch under Col. Rattray necessitated some changes in the Game Branch, and the staff was, consequently, reduced to the clerical needs of the office. The preservation of game, and indeed wild life generally, is receiving more consideration from the public. Manitoba is the only place where elk deer are to be found in large numbers, and every effort is being made to preserve these animals from extinction. The law enforcement branch also enforces the Horse Breeders' Act, the Animals Act, etc.

Marketing.

Selling on a quality basis is universally recognized as a basic factor in establishing trade. It establishes confidence, eliminates waste, guarantees satisfaction as far as possible, enables buying and selling without inspection by the buyer, this being done by some disinterested party, where possible, and, in addition it prevents the exportation of inferior produce by unscrupulous individuals, which reflects on the whole community, quite often the whole province.

Marketing on a quality basis has been responsible for the high quality of cereals placed upon our markets today. Other instances of improvement in quality, as a result of marketing on a quality basis, are found in the butter and wool trades. There is considerable agitation today that the sale of live stock be conducted in our yards on a grade basis. This has been successfully carried out in the Province of Quebec, and the principle is in force today in our own yards; that is the buyer really grades the animals for his own purpose. What the agitation, however, really seeks is that the grading be done by an independent board. While this request may be regarded as somewhat advanced, it cannot be gainsaid that the principle is sound, and the policy has a great deal to commend it.

To make a preliminary survey of the situation, an inspector visited all the firms engaged in the produce business. The inspection covered dressed poultry as well as eggs. The reports would indicate that the trade would welcome legislation making it incumbent upon those handling eggs for resale to have them candled and sold on a quality basis. The place to stop the sale of eggs unfit for human food is at the first sale. This being done, each package of eggs from this date on should be accompanied by a slip which would indicate when candling was done and by whom. Legislation requiring this to be done is in force in Saskatchewan and Alberta at present, and it is working out satisfactorily. This legislation, however, does not prevent inferior eggs from the western provinces being sold in Manitoba and, unless provision is made to prevent this, Manitoba will be the dumping ground for inferior western eggs, and we shall suffer accordingly.

Better quality in dressed poultry and eggs will be the greatest incentive to increased consumption, and increased consumption means a more stable market and more profitable production. When poorly dressed poultry is offered for sale side by side with attractively exhibited cuts of meats, even if, on entering the butcher shop, the customer intended to purchase poultry, the more attractive cuts of meats weans his appetite from the inferior poultry to beef, mutton, pork, or veal, as the case may be, and a sale of poultry is lost. This happens quite often, and it seriously affects the total consumption of poultry within the province, which ultimately reflects on profitable production. These are homely truths, easily understood, well known and persistent; but somewhat difficult of assimilation and adoption.

Produce Dealers' Act.

This is the second year of operation under "The Produce Dealers' Act," and we have again encountered the problem of getting a complete list of produce dealers. Last year seventeen firms were bonded under the provisions of the Act, while this year we have twenty-two. The definition of "produce dealer" given in the Act is as follows:

"Produce Dealer" means a person who within Manitoba by himself, his clerk, servant or agent as his principal business buys or sells any produce or receives any produce for sale either on commission or for account or credit of the consignor."

While a good many of these firms deal in produce, the produce section of their business cannot be regarded as their principal line of business; therefore they do not come under the provisions of this Act. While this is an apparent drawback in the Act, it is a very difficult one to overcome, and it is far easier to state the objection than to supply the remedy.

Comparatively few complaints have reached the Department during the year; in fact, only six which required any adjustment. In every instance the parties have been brought together and a satisfactory settlement made.

Our inspector visited 112 firms, which include all the large packing plants, wholesale produce dealers, retail merchants, butcher shops, etc., in an endeavor to ascertain the condition in which farm produce reaches the market in Winnipeg, also to learn of any suggestions which the trade had to make for improvement in the handling and marketing of farm produce generally. It was encouraging to learn that with few exceptions these firms report a marked improvement in the quality and the condition in which the produce reaches them. In the case of chickens, one complaint was that the chickens had not been properly cooled prior to weighing, packing and shipping. It is quite evident that not only is the quality and shape of the chicken affected by packing prior to cooling, but it also admits of a discrepancy in weight, which is liable to cause misunderstanding. In some instances, where chickens had been packed prior to cooling, they had even become discolored, the net result being that they lost both in grade and price per pound. Instances of this kind, however, are few and far between.

The following is a list of the firms licensed and bonded on November 30th, 1920.

E. Burdett & Sons, Princess St., Winnipeg.
W. W. Burdett Limited, Winnipeg
Canadian Packing Company Limited, Winnipeg.
Cameron & Heap Company Limited, Dauphin.
Dominion Produce Company Limited, 425 Ross Ave., Winnipeg.
A. Goldman, 308 Selkirk Ave., Winnipeg.
D. Kotlarsky, 670 Alfred Ave., Winnipeg.
Golden Star Fruit & Produce Co., 91 Lusted St., Winnipeg.
Consolidated Packers Limited, 245 Flora Ave., Winnipeg.
Mitchell Hay Company, 156 Grain Exchange, Winnipeg.
Northern Fruit and Produce Company, 69 Derby St., Winnipeg.
Prairie Coal & Produce Company, 311 McIntyre Bldg, Winnipeg.

Rosenstock Produce Company, 132 James St., E., Winnipeg.
Rusen, Solomon & Company, Cor. King and Jarvis, Winnipeg.
Royal Produce & Trading Company, 97 Aikins St., Winnipeg.
R. Smith & Company, 612 McIntyre Block, Winnipeg.
Standard Produce Co., 43 Charles St., Winnipeg.
Reimer Limited, 146 Princess St., Winnipeg.
Western Fruit & Produce Company, 390 Selkirk Ave., Winnipeg.
Western Farmers' Hay & Fuel Exchange, 884 Main St., Winnipeg.
Western Products Limited, 214 Enderton Bldg., Winnipeg.
M. Sisskind & Company, 465 Pritchard Ave., Winnipeg.

Farm Implements Act.

In common with the two provinces to the west, Manitoba enacted a Farm Implements Act two years ago, the Act becoming law June 2nd, 1919. While the need for legislation of this kind was not considered as pressing in Manitoba as it was thought to be in the other two provinces, it was felt both by the farmers of the province and by the heads of firms dealing in farm implements that an act of this kind would be a preventive measure in so far as it provided a basis of understanding for the selling and buying of farm machinery and repairs, and in this way would prevent misunderstanding and misrepresentation. This belief was well founded, and comparatively few complaints have reached this office of any violations of the provisions of this Act. Implement firms have followed out the requirements of the law, as far as submitting of reports or any changes in price lists, etc., are concerned. We are in constant touch with practically all the implement vendors, and their attitude is one of eagerness to comply with the Act.

Immigration.

War automatically cancelled all governmental efforts to induce immigration. Manitoba can carry easily double the number of farmers which our province supports today. Aside from the admitted economy and increased agricultural efficiency of reduced acreages in farmsteads, there are millions of acres of vacant land awaiting settlement and capable of supporting prosperous communities. Closer settlement will cheapen the cost of production and materially assist in the defraying of national expenses and wiping out our national debt. The idea that increased production of wheat in our Western Provinces will very materially affect prices in the world markets is not very well founded. On an average, Canada produces one bushel in every fifteen of the world's wheat production, and increased agricultural population does not necessarily mean increased wheat production pro rata. Many of our older farmers will be compelled to adopt crop rotations in order to continue growing wheat profitably; and on these farms there will be a reduced acreage of wheat, although, we confidently believe, an increased yield per acre. An increased farming population will relatively offset the heavy surplus of city dwellers, which our present farm population is forced to carry. In Manitoba our resident farmers number one-sixth our total population. Fully one-half of Manitoba's population are city dwellers. This is an adverse

ratio, and it cannot last as such indefinitely. Manitoba should adopt a vigorous immigration policy, a policy equally as vigorous in its selection of desirable citizens, worthy of enjoying the privileges of Canadian citizenship, as it should be in placing the advantages of living in Manitoba before the intending emigrants of other countries. The need for qualified farm help is pressing. If business concerns were called upon to run their business with "green" hands, there would be serious objections raised. Farmers are expected to accomplish economical and efficient production with helpers who have failed in pretty nearly every walk of life; in other words, anyone can farm. This is a fallacy. More consideration must be given to selecting and training efficient farm help and to bringing them to Manitoba. Particularly is this true with respect to indoor help on the farm.

Conferences.

This year the Commission of Conservation held its annual meeting in Winnipeg. Visitors were present from every province in Canada, and it was refreshing to meet such a progressive body of men—all experts in some phase of agricultural activity. Bright hopes were pictured for the future of Western agriculture, but all were agreed that there is urgent need of a more permanent system of farming.

Much discussion has centered around freight rates. Aside from the justification of the increase in freight rates, it cannot be gainsaid that it has occurred at a most inopportune time. Prices of farm products have dropped considerably during the past year. The cost of production has not decreased materially, and what slight decrease there has been occurred after the cost of producing the crop had been expended. In some areas farmers did not enjoy large crops when war prices prevailed, but nevertheless they were forced to produce these small crops at war costs. There can be only one outcome to such an experience; viz, farming at a loss. This area is certainly not extensive in Manitoba, but there are a sufficient number of farmers in such a predicament to call for very serious attention to any added cost to their already large outlay for production purposes. The farmer is called upon to bear heavy losses as a result of the dropping in prices; this being true, the other institutions in Canada are entitled to a similar loss and not to continue their operations on the basis of safeguarded profits. Surely those responsible for the increased freight rates will see the fairness of the arguments presented them and will correct the errors committed before it is too late to benefit such farmers who have not enjoyed war profits. We are dependent upon foreign markets for the sale of our surplus farm products, and the present cost of carrying some of the products of the farm to these available markets is prohibitive and places such markets beyond the pale of possibility. Deprive the farmers of Western Canada of a profitable market, and you render agriculture an unprofitable industry and destroy the most basic and accessible form of wealth Western Canada possesses.

GRASSHOPPER REPORT.

Submitted by A. V. Mitchener, of Manitoba Agricultural College.

"Late in March, 1920, reports came in from South-western Manitoba that grasshoppers were appearing on the ground where the snow had thawed away. Upon investigation, these grasshoppers (Stiropleura Decussata) were found to be forms which had hatched the previous autumn, and which had passed the winter in the immature or nymph stage. Types such as these have never done any particular harm to vegetation, and were not considered a menace. Forms which destroy crops of all sorts winter over in the egg stage, and usually begin to appear in May. Owing to the fact that large areas of grain had been destroyed in 1919, a sharp outlook was kept for the first appearance of the harmful forms.

"On May 17th, eggs were found to be hatching, and young 'hoppers were found on the higher grounds in the *South-western District. Investigation in the soil showed an alarming number of eggs. In a piece of sod just south of the railway tracks in the town of Melita, 75 egg clusters were found to the square foot. On an average, there were at least 20 eggs in each cluster. This meant that each foot of ground in that locality was capable of producing some 1,500 young grasshoppers, for practically all of the eggs were fertile even though they had passed through a very rigorous Manitoba winter. Grasshopper eggs were found in great numbers in many other localities and situations. They were found along roadsides, fence lines, lanes through farms, stubble fields, pasture fields, etc. They were found in varying numbers, but always dangerously numerous. South of the town of Deloraine, along a fence line on the farm of one of the prominent farmers, an average of 56 egg clusters was found to the square foot. Counting 20 to the cluster, this would furnish 1,120 young 'hoppers per square foot. This particular fence line was six feet wide. Each foot of the fence line, therefore, would furnish something like 6,720 young 'hoppers to eat the crops of wheat on either side. Again, this fence line was over a quarter of a mile long. In one quarter of a mile there would be about 1,320x6,720=8,870,400 perfectly healthy eggs. Many other similar actual instances could be given, but enough has been said to show conditions as they were. Needless to say, the farmers were discouraged and downhearted at the outlook for the approaching season.

"The area most infested included the six municipalities of Edward, Arthur, Brenda, Winchester, Cameron and Albert. The remainder of the South-western District (which is that part of the province, less the above six municipalities, lying west of range 15 and south of township 12) was infested to a somewhat lesser degree. Outside this area, infestation was scattered over various sections of the province. For the purposes of this report these areas may be indicated as area 1, area 2, and area 3, respectively.

"All crops such as wheat, rye, oats, barley, flax, etc., were attacked by grasshoppers. Much of the early hatching occurred in the sod beside the fields of grain; and the first evidence of injury was on the edge of the grain field. At the time when they were working along the edge of the fields, poisoning was much more easily done than later, when the 'hoppers were larger and had moved all through the growing grain. At first, the young grasshoppers moved in mass formation toward the centre of the field; and as they went they entirely cleared the ground of every vestige of vegetation. Later in the season, when they were generally through the crop, the leaves were stripped off, and many kernels were eaten, but still the stems remained in most cases.

"Several species of grasshoppers were common throughout the different areas. The harmfulness of any species is largely determined by its numbers. In one locality one species was most abundant; while in another place another species was most numerous. When the whole area was considered, the following were most destructive; namely:

Pellucid Locust—Camnula pellucida.
Lesser Migratory Locust—Melanoplus atlanis.
Red-legged Locust—Melanoplus femur-rubrum.
Two-striped Locust—Melanoplus bivittatus.

(*) This reference is to the Crop Reporting District.

One of the Machines used for mixing poison bait for Grasshopper Killing. A full description of the mixing machine is presented in Circular No. 59, entitled: "Poisoning Grasshoppers," issued by this Department.

Broadcasting the prepared bait. Note where the grain has been eaten by the Grasshoppers along the edge of the field. After being given the poison bait, the Grasshoppers take from 24 to 48 hours to die.

"On May 18th at a meeting of the council of the municipality of Arthur, the grasshopper outlook for the coming season was discussed. The members of the council decided that, in view of the serious situation confronting the farmers of the South-western District, a general meeting should be called to discuss plans for combatting the expected plague in area 1. A general meeting was called for on May 20th at 4 p.m. at Napinka. The reeves and councillors for these municipalities, and all others interested, were invited. At the meeting in Napinka, representatives were present from the municipalities of Edward, Arthur, Brenda, and Winchester. Albert and Cameron were not represented. Those present decided to wage a strenuous fight against the 'hoppers by means of poinsoned baits. The plan of campaign suggested by the Provincial Department of Agriculture was adopted. Each municipality was a unit. Each councillor was to be responsible for his ward, and the reeve was to be in charge of the work for the whole municipality. Mixing stations were to be established in the towns where the farmers could obtain the poisoned bait ready mixed. Each farmer was to be responsible for his own land, and the side of the road allowance adjoining his farm. In case of waste lands, the councils were to hire men to put the poison out if the 'hoppers became numerous there.

"The Provincial Government had previously promised to pay one-half of the cost of the ingredients for the poisoned bait used. At the Napinka meeting a request was made and forwarded to Winnipeg that the Provincial Government bear the whole cost of the ingredients. For the four preceding years crops had been a failure in the district, and many farmers were on the verge of bankruptcy. It was further felt that the fight waged in this district was a fight waged on behalf of all the farmers of the province. The grasshoppers were spreading out, and if left unchecked would ultimately disperse in all directions over the province. The representatives present at the Napinka meeting returned to their own municipalities, and began to make arrangements for developing the plans laid down.

"Organization meetings were held during the next few days at the following places; namely: Pierson, Waskada, Lyleton, Melita, Deloraine, Goodlands, Medora, Coulter, Napinka, Broomhill, Lauder, and Hartney. Mixing stations were established at each of these points, and also at Tilston. During this time, the cheering news was received that the local government had decided to bear the whole cost of the materials for the poisoned baits. This had a very great deal to do with the success of the whole campaign. At first, the materials were mixed with shovels; but soon the demand for the mixture became so great that mixers could not keep the applicants supplied. The result was that the Manitoba mixer was devised at the Waskada station. This is a mixer run by a gasoline engine, and capable of turning out several tons of wet mixture daily. This was used as a type, and soon each station had one of them in operation. This type was pre-eminently satisfactory, and gave much more satisfaction than other types which were tried.

"The poisoned mixture for grasshoppers which was used at the beginning of the campaign is widely known as the Kansas Mixture. Later this was modified. The original consisted of the following materials; namely:

No. 1—Bran, 100 lbs.; White Arsenic or Paris Green, 5 lbs.; Lemons, 12-15 fruits; Black Strap Molasses, 2 gals.; Water, 14 gals.

"The bran and poison were first mixed dry. The lemons were pulped in a meat chopper, and the pulp, along with the juice and molasses, were added to the water. Then the sweetened flavored water was gradually added to the dry-poisoned bran. This mixture gave excellent satisfaction.

"Another mixture used consisted of the following ingredients; namely:

Bran, 100 lbs.; White Arsenic or Paris Green, 4 lbs.; Salt, 2 lbs.; Water, 14 gals.

"This mixture was prepared after the same method as No. 1. The above mixture proved very useful especially when molasses and lemons could not be secured; but, on the whole, the results were probably not quite so satisfactory as those from Mixture No. 1.

"As a poison, White Arsenic proved to be more satisfactory than Paris Green, largely because it was less dangerous to handle for the men engaged in the mixing stations. Paris Green is a very fine powder and rises very readily as a fine dust. This, when in contact with the skin, especially if the skin is moist with perspiration, produces toxic effects. Some of the mixers

suffered a great deal from the effects of the arsenicals. White Arsenic is coarser and heavier, and did not produce such noticeable effects. The men at the stations all preferred White Arsenic. As far as results were concerned, one seemed equal to the other.

"A third bait was used in some localities. This is known as the Criddle Mixture, and consists of the following materials; viz.:

Fresh horse droppings, 15 gals.; White Arsenic or Paris Green, 1 lb.; Salt, 1 lb.; Water to make the mixture moderately moist.

"Although this gave satisfactory results where used, the supply of horse droppings was very limited, and the mixture could not be used on a large scale.

"Later in the season experience showed that a modified form of the Kansas Mixture gave excellent results, and had the advantage of being much cheaper than the original. Instead of using all bran, bran and sawdust were used, half and half. The addition of the sawdust did not detract from the usefulness of the bait, but rather made its consistency more desirable. The mixture containing half sawdust broke up more readily when being scattered on the ground, and, therefore, could be more evenly distributed.

The arrangement that the Provincial Government furnish all the ingredients while the local councils provide for mixing the materials and for getting the poisoned bait out on the land proved very satisfactory. At each mixing station in area 1, men were hired to prepare the bait for the farmers. The farmers were required to come to the station for the prepared bait, and to scatter it. The bait was taken to the infested portions of the farm in sacks and frequently scattered broadcast from a pail, just as grass seed is broadcasted. Some used a tub or box in the front of an old buggy or even the front of the buggy box itself and scattered the bait while seated in the buggy.

"The bait was scattered evenly and thinly over the ground where the 'hoppers were working. The men in charge of the mixing stations were instructed in the proper methods of putting out the bait; and they, in turn, instructed the farmers who came for the bait. At first, the baits were put out early in the morning; but later, when the demand became almost overwhelming, they were placed out at all times of the day, and as far as results were concerned, there appeared to be no great difference. Different weather conditions produce different results. The best time to put the bait out is when the grasshoppers are hungry.

The mixing stations were visited regularly mainly to see that the mixture which was going out was not too rich in poison. Some seemed to believe that if 5 lbs. of Paris Green to 100 lbs. of bran would kill grasshoppers, 7 to 8 lbs. of Paris Green to the same amount of bran would give much better results. The correct proportion of poison in this mixture meant a saving to the Government of hundreds of dollars weekly. A great percentage of the farmers were as careful of the materials as if they were paying for them directly; some were not so careful. To make the men who wasted the material more careful a limit was set on the amount a man might get per quarter section per day from the mixing stations. This restriction had the desired effect.

"The demand for bait varied at the different stations. The greatest number of applications for bait on any one day was at Waskada on June 15th when 185 farmers called at the station for supplies. On this day, 39,800 lbs. of poisoned bait were mixed and distributed to the farmers. *The curves shown in this report will give an idea of the number of farmers who called for bait as well as the actual amount of prepared bait which went out daily. These figures are based upon reports made out at eight of the principal stations in area 1. These reports embrace 7,703 applications from farmers for 1,659,100 lbs. of prepared bait. The curves show that the greatest demand was on June 15th with a fluctuating yet very heavy demand until July 5th. After this date, the demand gradually fell off.

"In area 2, the grasshoppers were not so general; yet were very numerous in many places. Mixing stations manned with the Manitoba Mixer operated at a number of points; but most of the mixing was done by hand labor which was able to keep the supply equal to the demand. In area 3, the greatest

(*) The chart referred to is omitted in printing this report.

outbreak was in the vicinity of Pilot Mound, Clearwater, Cartwright, and Glenora. The Manitoba Mixer was installed at these places. Another severe outbreak occurred in the vicinity of Carberry, where a mixer turned out a great deal of material. Gladstone had a severe outbreak. Grasshoppers were reported from as far north as McCreary and Laurier. Visits to these places showed that, fortunately, the outbreaks were localized.

"The results of the campaign are now fairly widely known. The menace to the crops was met and successfully held with the result that grain to the value of millions of dollars was saved to Manitoba in 1920. The effectiveness of the poisoned bait method of controlling locusts is unquestioned by 99 per cent of the farmers in the infested areas. A few figures will give an idea of how effective the poisoned baits were when used under optimum conditions. On June 12th, a piece of road allowance, 13-1-26, was examined, and actual counts of dead grasshoppers made. On an average ground surface 440 young, dead grasshoppers were found to the square foot. On an acre of such land, this would mean that there would be 19,166,400 dead grasshoppers. In a field of oats near there, on the same day, counts were made where one application of the poisoned bait had been out only 30 hours. On this land an average of 362 dead 'hoppers were found to the square yard, or 1,752,080 dead 'hoppers to the acre. In another place, there were 34 dead lying on 4 square inches of soil. This was not an especially selected piece as they lay as thickly on all sides. At the above rate, there were 53,317,440 dead grasshoppers to the acre. Other counts in many widely distributed points showed dead grasshoppers as follows: 70 dead to one-half square foot, 1,260 dead to a square yard, 600 dead to a square yard, 624 dead to a square yard, 360 dead to a square yard, 936 dead to a square yard, etc.

"In a letter dated Aug. 30th, 1920, J. T. McCallum, Reeve of the Municipality of Arthur, says:

" 'I think that the Provincial Government and the Department of Agriculture deserve great credit for their active and prompt action in this campaign. I hear nothing but praise from every farmer in this municipality. There is no question of doubt about the effectiveness of the bait; for everywhere it was used properly and continuously there was no damage from grasshoppers.'

"Mr. M. J. Basted, Reeve of the Municipality of Edward, in a letter dated Oct. 5th, 1920, says in part:

" 'The opinion is general that the efforts made practically saved the crop. Some think that every green thing would have been eaten; but I think that is an extreme view. We found the poison mixers to work well, the one with the revolving beaters inside, with the drum remaining stationary, giving much better satisfaction than the one where the whole revolved like a churn. In conclusion I would like to say that we fully appreciate the assistance the Government has given us.'

"Councillor Maurice Hartry, of Waskada, who is largely responsible for the Manitoba Mixer, and who had charge of the Waskada mixing station, in a letter dated Sept. 18th, 1920, says in part:

" 'My opinion of the campaign here is that if it had not been undertaken we would not have had any grain to thresh and they would have cleaned up most of the crop early in the season. We know the cost was immense; but I think it was worth while.'

"Mr. T. C. B. Boon, who had charge of the second largest mixing station in the province, Goodlands, says in an excellent report under the date of Aug. 21st, 1920:

" 'The Kansas Mixture appeared to give the best results generally, although the other mixture (referring to the salt-bran mixture) did very good work in places. We found Paris Green much harder on us all round than Arsenic, due probably to its being in finer particles. I have no hesitation in saying that the use of the poisoned bait saved the 1920 crop in my area.'

"From observations made in travelling hundreds of miles in the infested area, from talking with a great number of farmers, and from numerous reports such as the above, there seems to be no doubt about the fact that the poisoned baits saved a very serious crop situation in South-western Manitoba in 1920.

"The following tables show estimates of the value of the crops in (a) area 1. (b) areas 1 and 2. The value of the crop in area 2 would be the difference between (b) and (a).

(a) Total Crop for Six S.W. Municipalities.—Winchester, Brenda, Arthur, Edward, Albert, Cameron.

Crop	%	Acreage	Bushels per acre	Total Bus.	Price*	Total Value.
Wheat	37	278,610	11.7	3,259,737	$2.68*	$ 8,736,095.16
Oats	34	139,060	32.0	4,449,920	0.77	3,426,438.40
Barley	28	38,640	18.0	695,520	1.14	792,892.80
Rye	39	15,015	19.0	285,285	1.89½	540,615.07
Flax	39	8,190	8.5	69,615	3.37	234,602.55
						$13,730,643.98

*Cash Price at Winnipeg on Sept. 21st, 1920.

NOTE: (1) Illustration of column marked %. 37% of wheat grown in the Southwestern District was grown in the six municipalities mentioned in the above table. The percentages in this column are worked out from the 1916 Dominion of Canada Census Reports.

(b) Total Crop for S.W. District.—Area west of Range 15 and South of Township 12.

Crop	Acreage	Bushels per acre	Total Bus.	Price*	Total Value.
Wheat	753,000	13.6	10,240,800	$2 68	$27,445,344.00
Oats	409,000	32	13,088,000	0.77	10,077,760.00
Barley	138,000	20	2,760,000	1.14	3,146,400.00
Rye	38,500	19	731,500	1.89½	1,386,192.50
Flax	21,000	8.6	180,600	3.37	608,622.00
					$42,664,318.50

*Cash Price at Winnipeg on Sept. 21st, 1920.

NOTE: (1) Acreages of above crops obtained from provincial estimates obtained from Publications Branch on Sept. 20th, for year 1920.

(2) Bushels per acre obtained from provincial estimates of Sept. 15th, 1920, and Free Press estimates of Sept. 14th, 1920.

Averages of	Govt. Estimates.	Free Press Estimates
Wheat	6 places	13 places
Oats	4 places	12 places
Barley	3 places	13 places
Rye	4 places	0 places
Flax	2 places	8 places

(c) Cash Value of Crops Saved by Poisoned Baits in Manitoba During 1920

Areas	Total Value	% Saved	Value of Crop Saved.
1	$13,730,643.98	75	$10,297,982.98
2	28,933,674.52	20	5,786,734.90
3	Estimated value,		1,000,000.00
			$17,084,717.88

The above statement would indicate the value of the crop saved and the justification for the expenditures made in connection with the extermination of grasshoppers.

Research Needed

Industrial development has increased so rapidly as to preclude any quick and clear conception of the need for conserving the material or the vital forces of our country. Agricultural development in Manitoba has mainly been along the line of the one crop method. The loss from rust in 1920 estimated at three bushels per acre all over the Province—it is recognized that many districts were absolutely free from it, while others suffered far more than three bushels per acre—approximated $15,000,000 in wheat alone, not to mention oats and other cereals. The loss from weeds in Western Canada annually is estimated at seventy-five million dollars, and so on one could enumerate the preventable enemies of western agriculture which are the causes of financial losses to the farmer annually. Agricultural research is the need of the hour. Legislation may be necessary as a basis of understanding, but will not solve agricultural problems. What is needed is a system of farming that will make weeds, rust, etc., unwelcome boarders, if not impossible visitors. Straight grain farming will always develop weeds and, where tillage methods have been so prefect as to keep out weeds, the bare fallow will develop drifting and dissipate the vegetable matter. The inevitable must be recognized. We must adopt a permanent system of farming which will stand repetition year after year.

All of which is respectfully submitted,

J. H. EVANS,
Deputy Minister.

Report of Dairy Commissioner

Hon. Geo. H. Malcolm,
Minister of Agriculture and Immigration.

Sir:—I have the honor to submit herewith the report of the Dairy Branch for the year ending November 30th, 1920.

Seasonal Conditions.

The year 1920 has not been a favorable one for the increased production of dairy products, and it would appear that more than a full share of adversities were met. The winter was much colder than usual, which, combined with a late spring, caused a shortage of feed in certain sections of the Province. On account of these conditions, a large number of milch cows went to pasture in a greatly reduced condition; consequently, a portion of the summer had passed before the cows reached their maximum production.

The high price of hay and grain during the winter of 1919 prompted many dairy farmers to dispose of their cows, and market their hay and grain instead of feeding it to their stock. The cost of production has undoubtedly been exceedingly high during the past winter; and although to the consumer prices of dairy products seemed almost exorbitant, yet the dairy farmer has actually been working on a very much smaller margin than in previous years. The price of dairy products has not been increased in anything like the same proportion as the cost of feeds consumed by the dairy herd. This all militated against the increased production of dairy products. However, with all these drawbacks, the amount of dairy products produced shows only a slight decrease when compared with the previous year's production, which proves that the dairy industry has more than held its own with other branches of agriculture.

Winnipeg's Milk Supply

In regard to the source of milk supply for the city of Winnipeg, a gradual change is taking place. A few years ago most of the milk used for domestic consumption was produced within a radius of twelve miles of the centre of the city, on small farms of from one to five acres. These dairies are being gradually eliminated. Some of the owners moved farther out to where land is cheaper, where they can grow practically all their own feed, and can have more and better pasture; and they are producing milk under more natural conditions. This gives permanency to the business of milk production for the city trade.

With a yearly decrease in the number of small dairymen close to the city who deliver milk for domestic consumption, the large city milk distributing companies require to reach out farther in the country for their supplies to meet the increasing demand, and the most logical point to go for their supply is amongst the better

developed dairy districts, where cheese factories and creameries have been in operation for a number of years.

During the past two or three years several cheese factories have been closed, and their places taken by milk-receiving stations, which provide a more remunerative market. The milk is received at these stations from the farms, weighed, tested, cooled and shipped to the city. Six of these stations are in yearly operation. A number of creameries within a radius of 150 miles of Winnipeg are also used for this purpose during the winter months. A milk-receiving station may supply the city with milk for a portion of the year; then when milk becomes more plentiful it is separated at the station, the sweet cream shipped to the city, and the skim milk returned to the farmer. This helps to regulate the city milk supply during heavy production.

We have several points situated 30 to 80 miles from Winnipeg, which have been developed within the past few years, that now ship daily to the city from 25 to 200 eight gallon cans of milk, or an average of from one to eight tons. During the year two members of our staff spent considerable time in assisting and developing this branch of the industry, and, I am pleased to report, with considerable success.

Complexion of Manitoba Dairying.

We have approximately 25,000 farmers in the Province engaged more or less in dairying. From 900 to 1,000 ship milk to Winnipeg during the winter months, and about 500 during the season of heavy production. About 1,500 ship sweet cream to the city for domestic consumption, and the others market their surplus product in the shape of cream for butter making to one or more of the 53 creameries situated throughout the Province.

One of Manitoba's Country Creameries

Creamery Butter Trade.

Manitoba creamery butter found its way during the past year into wider markets than ever before. While a large proportion of our butter was disposed of to Canadian buyers, both east and west, a large quantity was shipped to the United States markets, such as Chicago and New York, also to European countries.

It is pleasing to note that the type of butter now manufactured in this Province is satisfactory to new markets that are available to us. This is important, as no doubt the surplus dairy products of Manitoba will go on the market in the form of creamery butter, and only through this source can we expect to build up a satisfactory export trade for some years to come. The majority of the creamery operators, realizing this, have rendered the dairy industry an important service in that they have equipped themselves to manufacture a standard product with good keeping qualities; one that the people in the trade can handle with confidence and satisfaction.

Dairy Production.

The following table gives the quantities, average prices, and values of milk and milk products produced during the year 1920:—

Product	Pounds	Price Cents	Total Value
Creamery Butter	7,666,802	55	$4,216,741.10
Dairy Butter	9,540,281	43	4,102,320.83
Cheese	226,229	27	61,081.83
Total	17,433,312		$8,380,143.76
Milk	153,254,342	3.9	$ 5,976,919.33
Sweet Cream in lbs. Butter Fat	2,512,354	63	1,582,783.02
Total			$15,939,846.11

Comparative Figures.

The following are the number of creameries operated in the Province, the output in pounds, average price, and the annual increase for the past nine years:—

Year	No. Of Creameries	Butter Output Pounds	Average Price Per Lb. Cts.	Selling Value At Creameries
1912	20	2,931,138	28.0	$ 820,718.64
1913	36	3,929,622	27.5	1,080,646.05
1914	35	4,761,355	26.5	1,261,759.07
1915	35	5,839,667	29.0	1,693,503.43
1916	37	6,574,510	31.0	2,038,098.10
1917	41	7,526,356	38.5	2,897,647.06
1918	42	8,450,132	45.0	3,802,559.40
1919	44	8,256,711	54.0	4,458,623.94
1920	53	7,666,802	55.0	4,216,752.10

Cream Grading.

Good cream is the basis of good butter. To make the best butter, we require a low acidity cream, or, in other words, sweet cream. With over-ripe, sour cream, no matter how competent the

buttermaker is, or how up-to-date the equipment may be, the quality of the butter will be second grade, and it will not hold up in storage. This class of butter will have to take second place in the markets of the world.

The keen competition between creameries, and the upward tendency of the market for the last three years, combined with the small difference in price for the different grades of butter, has worked against quality. Almost any quality of cream could be purchased and paid for as a No. 1 grade, and with the rising butter market money could be made by our creamerymen in handling this class of cream.

On account of the above condition, I could see danger ahead, and repeatedly warned our creamerymen what would happen if they did not pay more attention to the quality of the cream received. For the past three years, just previous to the season of heavy production, I have called all our creamerymen together for a conference, for the purpose of discussing and getting together on the question of grading cream, as well as other important matters relating to the manufacture of creamery butter. To make it more convenient for our creamerymen situated throughout the Province, we held sessions last spring as follows:—Winnipeg, April 12th; Brandon, April 14th; Dauphin, April 16th.

At all these meetings I laid special emphasis on the importance of grading cream and paying for same on a quality basis. I pointed out that we now have about 4,000,000 pounds of creamery butter to export yearly; that this butter is finding its way into the different markets of the world, owing to the overseas export demand; and that we have an excellent opportunity of building up a reputation for our creamery butter if we only produce the quality; and that the best and quickest way to do this would be to recognize the dairy farmer who produced a quality of cream which would make the finest butter. It is just as reasonable and necessary to grade cream as to grade grain.

As a result of these meetings, the following circular was sent to all creamery operators in the Province:—

"At the above Creamerymen's Conferences the following subjects were thoroughly discussed:—

First. Grading of cream and payment for same according to grade. After thorough discussion of this question, it was unanimously agreed at all three meetings that we endorse the cream-grading standards as adopted at the creamerymen's meeting held in Winnipeg, April 2nd, 1919, which read as follows:—

Cream For Buttermaking.

Special or Extra First Grade—This grade shall include any lot of cream which is fresh and clean in flavor, of a uniform consistency, and fit for making into special grade butter. The acidity of cream in this grade shall be not more than .3% (three-tenths of one per cent) at the time of being graded at the creamery where it is to be manufactured into butter.

First Grade—This grade shall include any lot of cream which is reasonably fresh and clean in flavor, of a uniform consistency and fit for making into butter of this grade. Its acidity should not be more than .5% (five-tenths of one per cent) at the time of grading at the creamery where it is to be manufactured into butter.

Second Grade—This grade shall include any lot of cream that does not meet with the requirements specified for the next higher grade; which is bitter, stale, musty or otherwise unclean in flavor.

Cream below second grade to be classed as "Off Grade" and either rejected or paid for according to value.

Prices—It was decided that a difference of two cents per lb. fat should be made between "Special or Extra First Grade" and "First," and a difference of three cents per lb. of fat between "First" and "Second" grade cream.

These standards are practically the same as adopted in Alberta, and are part of the Dairymen's Act of that province, which is enforced by law.

Butter Grading—It was further resolved at all three meetings that No. 1 grade butter be divided into two classes, one to be designated by a score of 39 and the other by a score of 40, and that the score for Flavor be invariably shown on the grade certificate.

It was further resolved at the Winnipeg meeting that the Department be asked to adhere strictly to our established butter standards, regardless of what the ultimate destination of a particular lot of butter may be, as by pursuing this policy we believe our standards may be more readily maintained and the buyer protected.

It was the opinion of the Brandon and Dauphin meetings that the question of butter standards and grading should be left to the discretion of the Department.

It was the opinion of the meetings at Winnipeg, Brandon, and Dauphin that cream grading can be successfully enforced only through stricter grading of the butter, and recommended that the Department graders, where there may be any question as to whether butter be first or second grade, should put it into second grade.

Moisture—It was further recommended that buttermakers make moisture tests of every churning and that the record of same be handed over to the proper authorities, so the manager or secretary at all times may know the moisture content. The Department is of the opinion that it is not safe to try to incorporate more than 15.2% or 15.3% of moisture, certainly not more than 15.5%. If you try to incorporate 15.8 or 15.9%, you are liable to get over 16% moisture at one end of the churn. If you should happen to get over 16%, place it in the storage, cool it down, put it back in the churn the following day and re-work the moisture down below 16% before placing on the market. By following this system, creamerymen will avoid the unpleasantness which often follows the placing of butter on the market which contains excess moisture. Dealers in Winnipeg intend to follow the system which they inaugurated last fall of testing every churning received for moisture.

Texture—It was the opinion of those present at the meetings that we must guard against short grain or salvy butter. This condition can be overcome by using correct temperatures both in churning and washing.

Color—Try and get a "June grass" color throughout the year. There is a tendency at the present time to work on the "pale" side. With oleomargarine on the market, we must guard against this.

Salt—We should have about 2 to 2½% salt in the finished butter. This is what the majority of our creameries are running at the present time.

Finish and Packages—Be sure and have a nice smooth finish on your butter, and parchment paper nicely folded. Pack your butter solid in the boxes, so there will be no holes showing when the package is turned out. Soak your parchment paper over night in strong brine and 1% formalin solution to prevent mold. If mold gets in your creamery, it is difficult to get rid of, and it causes considerable loss.

Weights—There should be at least 56¾ lbs. of butter packed in each box, clear of the parchment. This will allow for shrinkage, and if scales are correct there should be no trouble regarding short weights. It is most important that scales for weighing cream and butter should be in good condition, and be inspected at least once a year.

No grade certificates will be issued unless the butter has been made from properly pasteurized cream, heated to 170 degrees F. and held for 10 minutes, which is considered a safe pasteurizing temperature. We would kindly ask your co-operation in connection with carrying out the above points."

The Dominion Educational Butter Scoring Contest.

This is the second year for the above contest, which was arranged and conducted by the Dominion Dairy Branch, in co-operation with the different Provincial Departments of Agriculture. Every province in the Dominion took part, and was represented by four creameries; each of these creameries forwarded one box of butter to Montreal during the six months of May to October inclusive. These boxes were scored in Montreal on arrival, and each month following, for the purpose of determining the keeping quality, as well as the quality of the butter when fresh.

The creameries representing Manitoba for the year 1920 were as follows: Shoal Lake Creamery, J. R. Nesbitt, Manager; Crescent Creamery Co., Brandon, A. Stoodley, Manager; Manitoba Creamery Co., Winnipeg, Alex. McKay, Manager; Crescent Creamery Co., Winnipeg, Ed. Keough, Manager.

A record of the churning process accompanied each box. Monthly reports of the scores and details of manufacture were mailed to every creamery in Canada. On the invitation of Mr. J. A. Ruddick, Dominion Dairy Commissioner, and with the Minister's consent, I visited Montreal Nov. 2nd and 3rd, for the purpose of examining these samples and conferring with dairy officials from the other provinces, with the object of unifying and standardizing the different grades of creamery butter.

I am pleased to report that the Shoal Lake Creamery received the highest score for the whole of Canada in the re-score on the 1919 samples. The original score, May 1919, was 42 points for flavor with a total score of 97 points. The re-score for flavor in October, six months after being made, was 42 points, with a total score of 97. This shows the wonderful keeping qualities of butter made from sweet cream, properly pasteurized, that is 170 F. and held for 10 minutes, the temperature recommended by this Branch.

Personal Work Outside the Province.

By request of the exhibition boards, and with the Department's permission, I acted as judge of dairy products at the annual provincial exhibitions held in Calgary, Alta., Edmonton, Alta., Regina, Sask., and Brandon, Man. I also delivered addresses at the dairy conventions at Moose Jaw, Sask., and Edmonton, Alta. I appreciated the opportunity of judging at these large provincial exhibitions, as it is a valuable experience to place the awards on dairy products where exhibits from practically every province in Canada are on exhibition. The quality was so fine and the competition so keen, that I certainly benefitted by the experience.

Grading of Creamery Butter.

During the year 6,285 churnings were graded; 620 moisture, 120 salt, and 260 Storch tests were made. The grading of carlots outside the city was confined to those shipped from Brandon,

and twelve special trips were made for this purpose, travelling 2,596 miles in performing this duty. The quality of the season's output was slightly below that of last year, and the percentage of "seconds" was exceptionally high during July and August. The No. 2 butter this year was, in almost every case, caused by old, stale cream. This calls for a word of comment. There is no doubt that the falling off in the quality of the season's butter production was due almost wholly to a lower quality of cream. While, to a certain extent, it is true that climatic conditions and the avail-

Ashern is one of several points between the Lakes where the creamery industry has attained considerable importance.

able labor on the farm where it is produced are factors in the quality of the cream, it is equally true that the general market conditions are the greatest determining factors. Market conditions are always reflected in the relative selling price of the various grades of butter in the open market. During the years in which the quality of our creamery butter output was improving, the market supplied the spur of a fairly wide "spread" in the price of the different grades. During the seasons of 1919 and 1920 the spread in the different grades amounted to about 2 cents per lb. between

specials and seconds, as against 3 to 5 cents per lb. during the corresponding period of previous years.

Butter tanted with "stink weed" is on the increase, and in the southern part of the province this weed caused a great loss to the creameries that accepted cream so tainted.

Many of the creameries are getting more uniformity in the workmanship, and it is encouraging to get a car quite uniform throughout. There are still a few creameries that fail to pay sufficient attention to the incorporation of moisture, and we were obliged to score some shipments quite severely on account of this defect.

In making salt and moisture tests, it was our aim to get some information as to the variation in these constituents, and while the moisture tests show evidence of better control, we feel that too many of the makers are salting by guess, and this defect varies between both extremes to the dissatisfaction of many makers.

We now have arrived at the period where the butter supply of the world's markets more nearly meets the demand, and the variation of price for the different grades of butter once more encourages the maintenance of quality; and this condition of the market will be more in evidence during the next few years. When the financial returns seem to justify the farmer in his expenditure of time and in his pains in providing the facilities to produce a higher grade of cream, he will undoubtedly follow the voice of the market transmitted to him by the purchaser of his cream in the tangible form of dollars and cents. The relative values of the different grades of butter in the open market will naturally determine the relative price which the butter manufacturers can pay for butter fat in the different grades of cream.

Mr. J. A. MacDonald, who acted as Dairy Produce Grader for the past three years, resigned on April 1st to take up commercial work; upon his retirement Mr. J. A. McManus was added to the staff, and later Mr. J. R. Sweeney. Both these men have had considerable experience in dairy work, and have given excellent service in connection with the grading of butter.

Creamery Instruction.

Creamery and cream-receiving station inspection work was started by Mr. MacKenzie early in April. He first visited all the cream-receiving stations to see if they were living up to the requirements of the Dairy Act.

Fifty-three creameries have been in operation, new ones having been built at Beausejour, Notre Dame de Lourdes, St. Claude, and two in Winnipeg. Creameries at Portage la Prairie and Somerset, which had been closed, re-opened this season. On account of the increasing number of creameries, making it difficult to visit them as frequently as necessary, it was thought advisable

to transfer four to Mr. Villeneuve, viz., St. Boniface, Notre Dame de Lourdes, St. Claude, and Ste. Rose.

The long, severe winter, and the scarcity of feed, caused the cows to come through in poor condition, which, combined with the lateness of the spring, delayed the season about six weeks; the creameries reporting a very small make of butter up to May 15th, especially in the North Western districts. We found the quality of the cream was not as good as in previous years, which was partly accounted for by the extremely hot weather; the producer not having arranged a cooling system; and also on account of the cream not being properly graded by many of our creamerymen; consequently there is very little encouragement for the producer to take extra care of his cream, as in many cases he would get just as much for No. 2 cream as for No. 1. At some of the creameries grading of cream was strictly followed, resulting in an improved quality. One creameryman handles a line of cooling tanks for sale to his patrons.

To get improvement in the quality of cream, we require more co-operation. First, this should be practiced among the creamerymen, thus securing universal grading and paying for cream according to grade; second, it should be followed between producer and manufacturer, both working for improvement in quality of the raw material.

The creameries in Manitoba were never so well equipped as they are at present. During the year over $120,000 was spent in improvements and additions to buildings and in new machinery, while in the building and equipping of new creameries over $45,500 was invested.

In addition to regular inspection and instruction work, Mr. MacKenzie graded 1,347 churnings of butter at Brandon and Winnipeg. He also visited about 200 farms to discuss improvements.

On regular creamery work Mr. MacKenzie travelled 11,384 miles, making 119 visits to creameries and 25 to cream-receiving stations. Other members of the staff made 50 visits to creameries, making a total of 169 creamery inspections. Mr. MacKenzie also travelled 2,619 miles to speak at different dairy meetings, a total for the year of 14,003 miles.

Inspection of Cheese Factories.

The yield of milk this year was also poor in the cheese districts, owing to the condition of the cows in the spring and to the summer being dry and hot. Most of the cheese factories have been shipping milk to the city, on account of the shortage of milk in Winnipeg during the summer months, and only 12 visits were made to cheese factories during the summer.

Inspection of Milk-Receiving Stations.

Last spring it was decided that these plants should be inspected, and Mr. Villeneuve was instructed to take charge of this

work. The plants are situated at Letellier, Ile des Chenes, Otterburne, St. Pierre, La Broquerie, Giroux, and Clandeboye. Thirty-four visits were made to these plants, and with the exception of two places it was necessary to make numerous suggestions in regard to improving the sanitary conditions. There were also a lot of complaints from the farmers furnishing milk to these plants, in regard to their weights and tests, which were investigated; some complaints were found to be without any foundation, but for others there were good reasons.

Mr. Villeneuve visited 240 farmers during the year; with the object of studying conditions and requirements in the different localities. General information was given on such subjects as—Improvements of the Dairy Herd, Calf Raising, Care of Milk and Cream, Construction and Ventilation of Stables, and Feed and Pastures for Dairy Cows.

A few of the districts which Mr. Villeneuve covered are St. Pierre, St. Malo, Otterburne, Giroux, La Broquerie, Ste. Agathe, St. Claude, Notre Dame de Lourdes, Iles de Chenes, and Letellier. The farmers in all these districts have made considerable progress in improving their stock during the past few years. He succeeded in obtaining and placing ten cows and twenty registered sires. He also spent two months judging at Boys' and Girls' Club Fairs.

In connection with the inspection of cheese factories, creameries, and milk-receiving stations, Mr. Villeneuve, during the year, travelled 4,485 miles, in connection with judging at Fairs 1,450 miles, attending meetings 4,453, visiting farmers 1,600, making a total of 11,988 miles.

Judging at Exhibitions.

At the Inter-provincial Exhibition, Brandon, members of the Dairy Branch staff conducted the Milking and Buttermaking Competitions, and placed the dairy products. We also supplied dairy judges for a number of the larger agricultural fairs in the province.

Meetings.

As usual, our Branch has co-operated with the Agricultural Extension Service, in organizing and furnishing speakers for meetings and short courses on dairy subjects. Messrs. MacKenzie and Villeneuve devoted their entire time from November 15th until the last week in March, holding meetings and discussing dairy subjects in different parts of the province. The districts covered this year were in those outlying portions of the Province that are especially adapted to dairying, as well as the older districts where grain growing has been followed for a number of years, and, on account of changed conditions, there is undoubtedly a strong desire towards more dairying in these older districts. In years to come dairying will form a very important branch of the agricultural operations in the older districts of Manitoba.

An innovation this year was the use of the moving picture machine, equipped with films on agricultural subjects; viz., Judging the Dairy Cow, Creamery Buttermaking, and Testing Milk. At these meetings such subjects were discussed as: Use of Pure Bred Sires; and, in this connection, Mr. MacKenzie succeeded in placing seven pure bred dairy sires under the loan system conducted by the Live Stock Branch of the Dominion Department of Agriculture, with which Branch we are co-operating. Other subjects discussed were—Care and Feeding of Dairy Cattle; The Best Method of Raising Calves; Balanced Rations; Economical Milk Production; Care of Milk for the City Trade; Care of Milk for Creameries; Care of Milk for Cheese Factories; Herd Records; Handling Cream Separators; Dairy Barn Construction and Ventilation; Growing of Forage Crops; Testing Milk and Cream; The Growing of Corn and Sunflowers for Silage; Building Silos, and in this connection I might mention that quite a number of silos have been built all over the Province, including eight at Letellier and St. Joseph, one at St. Pierre, and one at Otterburne, the latter being a pit silo. We want more silos, and our Branch is strongly encouraging their erection wherever possible.

Messrs. MacKenzie and Villeneuve held meetings at McMunn, Midwinter, Birchville, Fisher Branch, Fisherton, Inwood, Spruce View, Buffalo, Fish Lake, Wheat Hill, Malonton, Fraserwood, Rembrandt, Geyser, Arborg, Tarno, Rosenburg, Okno, Vidir, Framnes, Sambo, Gardenton, Tolstoi, Rosa, Stuartburn, Vita, Arbakka, Piney, South Junction, Lonesand, Amaranth, Langruth, Big Point Hall, North Lakeland, South Lakeland, Hollywood, Agardsley, Bluff Creek, Kinosota, Ashern, Pioneer, Ralph Connor, Silver Bay, Newholme, Kiesman, New Scotland, Ste. Anne, Moosehorn, Letellier, Ste. Jean, St. Pierre, St. Malo, Isle de Chenes Ste. Agathe, St. Leon, Fannystelle, St. Adolphe, Notre Dame de Lourdes, Haywood, Rathwell, Aubigny, St.Claude,Thibaultville, Letellier, Lorette, St.Joseph, Ste. Elizabeth, St. Lazare, Bruxelles, Giroux, Otterburne, Oak Lake, St. Alphonse, La Broquerie, Navin, Swan Lake, Mariapolis, Blumehof, La Salle, Dunrea, Vassar, and Ste. Genevieve. 117 meetings were held at these points with a total attendance of 8,649, an average of 74 to a meeting.

Acknowledgements.

As this is a report on the work done by the Dairy Branch, I have much pleasure in attesting to the valuable services rendered by the members of the staff during the year; each one has labored incessantly in the interests of the dairy industry and has accomplished much valuable work. I submit a list of the different members of the staff with their respective duties:—

I. Villeneuve, Instructor and Inspector of Cheese Factories and Milk-receiving Stations.

J. A. McManus, Dairy Produce Grader.

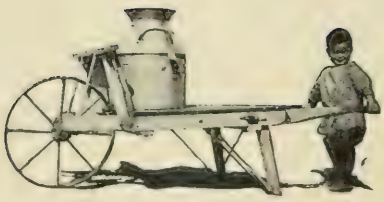
J. R. Sweeney, Dairy Produce Grader.

D. E. MacKenzie, Creamery Instructor and Inspector of Cream-receiving Stations.
Miss I. Foster, Clerk and Assistant in Laboratory.

I again desire to acknowledge the generous co-operation during the year of the creamery operators, wholesale trade, cheese manufacturers, directors of the Manitoba Dairy Association and The Dairy Manufacturers' Association of Manitoba. This Branch is also indebted to other branches of the service for courtesies and assistance on many occasions, as well as many others interested in the development of dairying both in Manitoba and the adjoining Provinces.

Respectfully submitted,

L. A. GIBSON,
Dairy Commissioner.



Report of the Weeds Commission

Hon. Geo. H. Malcolm,
Minister of Agriculture and Immigration.

Sir:—We have the honor to submit for your consideration our fifth annual report as Provincial Weeds Commissioners.

Seasonal Conditions.

As we stated in our last annual report, the excessive rains in some portions of the Red River Valley during the summer of 1919 prevented many farmers from properly preparing their fallows. The natural result was that numerous so-called fallowed fields were weedy at the very beginning of the season, and it became necessary to cut such crops for green feed, thus preventing the weeds from going to seed. As a rule, farmers were willing to do this, but in a few instances strong pressure was necessary before the settler would cut down the infected crop.

Appointment of Inspectors.

All the 118 rural municipalities appointed inspectors this year and also most of the urban municipalities. We regret, however, that the selection of inspectors, in many instances, has been unfortunate. While some of the municipal councils appreciate the gravity of the weed situation, and have employed the best man available, others have been very careless in this regard and have appointed the man who would accept the lowest salary, irrespective of his fitness for the work of Weeds Inspector. The difficulty in obtaining qualified men for this work is decidedly apparent. Frequently the remuneration offered is not such as would induce a suitable person to apply for the position. It is evident that before much progress is made in weed eradication a number of the municipal councils must select better men as Weeds Inspectors and pay them adequate salaries.

Educational.

Realizing that education is one of the most important items in weed eradication propaganda, your Commission has spent a large portion of the past winter in attending weed meetings. Altogether seventy-four meetings were held, and, in spite of the very severe weather, there was an aggregate attendance of between three and four thousand farmers and their families.

Members of the Commission also addressed the following meetings: The Brandon Kiwanis Club on May 5th; The Conservation Conference, July 15th; Convention of Delegates, October 8th and 9th; The Conference of Agronomists on November 5th and 6th. The Chairman of the Commission also gave two lectures to returned soldiers at the M.A.C. and acted as judge at several fairs.

Specific Weeds.

Perennial Sow Thistle.—Municipal Weeds Inspectors generally report that Perennial Sow Thistles are not nearly as prevalent as

in former years. Evidently the system of a thoroughly worked, black summer fallow, so frequently insisted on by the Commission and so generally practiced by our best farmers, is making an impression on the spread of this very noxious weed.

Canada Thistle.—We regret that there is no apparent abatement in the spread of Canada Thistles. Farmers generally do not realize the serious loss caused by the presence of these weeds. In some municipalities fully ninety per cent. of the farms are more or less infested with them. If the perfectly black summer-fallow system is used, there should be no difficulty in eradicating them. But the leaves of the plant must not at any time appear above the surface of the ground or they will obtain a fresh start.

Russian Thistle.—Owing no doubt to the unusually light rainfall of the past summer, this noxious weed has spread rapidly; and unless more strenuous measures are taken all the lighter soils of the Province will soon become infested with it. Unfortunately, the average farmer treats this weed very lightly until his land becomes so badly infested that it appears almost impossible to completely eradicate it. No doubt one of the best systems for the control of this weed is to follow the grain binder closely with a double disc harrow or cultivator. At this time the thistle plants are small and readily destroyed, but if the discing or plowing is delayed until the grain is threshed the thistles have become large and firmly rooted. When they have reached this latter condition, it is frequently impossible to cover them with the plough or to destroy them with a disc or cultivator. Besides, at that late date, there is always the danger of seed becoming ripe and spreading.

In addition to the destruction of Russian Thistles in the stubble, all plants in fence corners and on roadsides should be mown, or, better still, hand pulled and burned. An American authority states that the Russian Thistle has in 20 years infested a continuous area of about 35,000 square miles in that country and is causing a loss of at least one million six hundred thousand dollars each year in wheat alone. It, therefore, behooves us to make a strenuous effort to eradicate this pest before it obtains full control of our Province. We are of the opinion that if every municipal council, as well as the farmers generally, had given the Commission the co-operation from the start that they did during the past season, this weed would now be under control.

Annual Weeds.—Such annual weeds as Common Mustard, Lamb's Quarters, Red-root Pigweed and Fleabane were very much in evidence in the grain crops this year, particularly on spring plowed and fall plowed land. Apparently the growth of grain was checked by the cold dry weather in spring, giving these deeply rooted weeds an opportunity of spreading. Elevator men report that in some cases there is among milling grain, by weight, as much as twenty-five per cent. of the seeds of these weeds. If skim plowing of land intended for summer-fallow or late barley was more generally practiced in the fall, and the land worked on the surface in the spring, these annual weeds would not be nearly so numerous.

Wild Millet.—Many inquiries are reaching the Commission re-

garding the best methods for the eradication of this weed. We find this name is frequently given to Green Foxtail (Setaria Viridis). The plants of this weed have a head (panicle) from three to six inches long, very much like timothy, but the seed is similar to the cultivated millet. This is a persistent weed which seeds

The "Inter-Provincial Weed Special" and some of the people who attended it. This train was run for six weeks during January and February, 1921, operating in Manitoba, Saskatchewan and Alberta. It was under the joint auspices of the various Departments of Agriculture and the C. P. R.

profusely from harvest to late autumn. The plant is usually from one to four feet tall, though when started late and pressed for time, foxtail matures seed when no more than three inches high. Cattle will eat the plant when quite young, but it soon becomes woody and worthless. It prefers a somewhat loose, warm, sandy soil, but it is sometimes found even in clay loam. The seed is supposed to have been imported from Europe among grass seed. This weed seldom gives much trouble in heavy rank crop, but it grows freely in a light crop of grain, even in a time of drought. A badly neglected crop of corn or field roots is favorable to its growth. For this reason none of these crops should be grown unless the farmer is prepared to keep them free of weeds.

The most suitable method for its eradication in this Province is to double disc, cultivate, or skim plow the stubble as soon as possible after harvest, thus preventing the late blossoming plants from seeding. The following summer the weeds must be allowed to grow until a few inches high, then destroyed by shallow plowing, or by the use of the wide toothed cultivator. Great care must be taken that none of the seeds ripen during the summer. This green summer-fallowing will destroy not only the foxtail, but also any other annual weeds that may grow on the land. The seed of this plant is very much smaller and lighter than grain and can be readily cleaned out of either wheat, oats or barley.

Special Tax.

We are pleased to note that an increased number of municipal Weeds Inspectors are making a strenuous effort to clean up badly infested farms through the levy of a special tax. This is provided for in section 36 of the Noxious Weeds Act.

One Inspector reports that out of 28 fields taxed in 1919, 25 of them have been so thoroughly summer-fallowed during the past Summer that the Sow Thistle was eradicated, and therefore the tax was withdrawn. The tax on the other three parcels has been paid for this year, and unless these particular fields are cleaned up the tax will be levied again next year.

Co-Operation of Railway Companies.

Your Commissioners desire to acknowledge the generous co-operation accorded us by the different railway companies.

Progress.

We are pleased to note that several municipal weeds inspectors report that farms that were badly infested with Canada Thistles and Perennial Sow Thistles in former years are now perfectly free of these very noxious weeds. This shows clearly that by the intelligent use of the duck-foot cultivator in a perfectly black summer-fallow these can be exterminated.

Respectfully submitted,

S. A. BEDFORD,
GEO. WALTON,
H. B. BROWN,
Weed Commissioners.

Report of Live Stock Commissioner

Hon. George H. Malcolm,
Minister of Agriculture and Immigration.

Sir,—I have the honor to present herewith the annual report of the Live Stock Branch.

The General Situation.

The decline in prices during 1920 has had a depressing effect on the live stock industry. The extremely severe and long winter one year ago, with the general unrest, intensified the situation. The inclination to lessen the work on the farm and the desire for more leisure, together with the extremely low prices of hides and wool, discouraged many who for long years have been among our good producers.

With the serious decline in the price of grains of all kinds, however, we realize that live stock is necessary to success; and when the situation is fairly reviewed, good animals are still bringing reasonably attractive prices. It is the unfinished and inferior animal which has had and still has the evil effect on the market. The coming of remunerative prices for good stock, therefore, is regarded as almost a certainty; and I firmly believe that the experience of the past will do much to stimulate a desire to produce a better type of animals and furnish them in better condition to the market. "Fewer but better animals," should be our motto.

Instead of enquiries as to when and how owners could best dispose of their stock, as during the past year, there are now a few enquiries as to where and how stock can be secured; also as to the best methods of care, feed, etc. In the future the industry will have more friends than ever.

I would regard the present as an opportune time to lay the foundation of a herd or flock. Also the advisability of every farmer keeping at least one brood sow is beyond question.

Permanence in agriculture can be achieved only through the production of cereals, grasses, roots and vegetables of all kinds, together with the raising of live stock. The maintenance of the fertility of our soil demands the keeping of animals.

Our stock did well during the summer and went into winter quarters in good condition.

Much interest is expressed in the possible removal of the British embargo. Should this become a fact, it will stimulate the industry.

Live Stock Work in Need of Popularization.

At present farmers find it almost impossible to get efficient help to look after stock properly. I am repeatedly asked where such help may be procured. If we are to produce good animals,

we must have this class of labor. Should we not seek to create a greater desire for live stock work in the minds of the youth?

The proportion of good cattle among those coming to market is placed by leading authorities at not more than ten per cent. We need not expect such an increase in the proportion of good stock as is desirable, until the other want is overtaken.

Water Supply.

Much practical assistance to the live stock industry has been given in the securing of water by the Government well-boring machines, of which there are eighteen in operation in different parts of the province. In a great number of cases where heretofore the farmer was forced to haul water for his stock, he has plenty now. It is true that in some cases this water carries some mineral ingredient, such as various salts, but it is still excellent water for stock. In stock raising a supply of water is almost as necessary as a supply of feed; and I feel that the finding of a supply of water for animals on some hundreds of farms has materially widened the live stock keeping possibilities of Manitoba and thereby increased the value of the lands affected.

The Silo.

There is no doubt that use of the silo is the solution of the feed problem. I confidently expect silage feeding to become universal in profitable feeding of live stock. Other foods are made more effective when silage is fed freely. Large quantities of feed can be stored under conditions which develop the least percentage of waste and at the minimum cost, once the silo is built. Convenience of feeding is also an important consideration. While silage can possibly be fed with most profit to dairy cattle, I maintain that it can be fed with great profit to other stock. It is pleasing to note that a number of silos have been built by our farmers this year.

Diseases.

This office has received but few reports of any infectious or contagious disease. No case of glanders in horses has come to our notice during the year. Hearty co-operation exists between local veterinarians, the officers of the Dominion Health of Animals Branch and this Department in the war against communicable diseases.

In most cases where cattle were reported as being affected with Hemorrhagic Septicemia, the trouble was found on investigation to be the result of exposure and want of proper food and bedding.

The cases of Blackleg reported were effectually cared for by inoculation with the Blackleg pellet or with filtrate, where applied in time.

Fall Pasture.

The lack of sufficient fall pasture in all parts of the province is serious. In this relation Sweet Clover is now receiving much

consideration, since the experience of a considerable number of farmers has proven it to be vigorous to withstand drought and winter killing.

Fall rye, sown with oats or barley in the spring, makes excellent forage in the fall and in many cases the rye so sown is giving an excellent grain crop the following year.

Ventilation.

Stables frequently lack sufficient lighting facilities to enable every part to be penetrated by the sun. Not only is such sunlight desirable, but it is absolutely necessary to the health of animals. Proper ventilation is also necessary, and should be provided in every stable, especially in warm stables. When animals that have become too warm in the stables are exposed to severe weather, the change is too great, and they contract colds, which frequently develop serious complications. For all young stock I recommend stabling in which the animals never become warm enough to sweat; in fact, they become much more rugged, providing they have plenty of bedding and good shelter from all drafts, by having their stables at such a temperature that they will not chill when exposed to the cold. Such animals will thrive much better in the spring than those wintered in warm stables. I recommend the one-storey stable or shed with the feed barn at the end.

Live Stock Statistics.

Following are figures compiled under the joint auspices of the Dominion Bureau of Statistics and the Manitoba Department of Agriculture, showing the number of horses, cattle, sheep and swine in Manitoba in June, 1918; in July, 1919; and in June, 1920:—

Year	Horses	Cattle	Sheep	Swine
1918	383,272	746,899	136,782	284,596
1919	379,356	781,771	167,107	261,542
1920	356,628	757,974	156,716	212,542

The estimates as to values which follow are on the basis of prices as at November 30th, 1920:—

	Number	Head	Total Value
Horses	356,628	$140.00	$49,927,920.00
Cattle	757,974	60.00	45,478,440.00
Sheep	156,716	11.00	1,723,876.00
Swine	212,542	20.00	4,250,840.00

Horses.

The good, large, heavy draft horse meets a ready market; principally the demand is from our cities and the lumbering industry in the northern parts of the four western provinces. For horses from 1300 to 1500 lbs., in good condition, there has been a steady market from the local districts where increased acreage is being brought under cultivation.

There have been some good sires,—Clydesdales, Percherons

and Belgians—imported, as well as a few mares. These have been pretty well distributed through the province.

Under the Federal Government plan of assistance to horse breeding, a number of clubs have been formed, and excellent sires are in service under this system. This office is supplying all enquirers with the literature supplied on this matter by the Federal Department of Agriculture.

In many instances inferior stallions are being replaced by superior ones; still too many ordinary sires are doing service. This Department constantly keeps before the people the necessity for using a better class of stallion, and respectfully solicits the hearty co-operation of all in this important work.

It is gratifying to record the winnings, at the Chicago International Exhibition, of the only two horses which were sent for competition this year from Manitoba. These were the magnificent Percheron stallion, "Monarch," 10387, 134296, which won second in the four year old class, and the beautiful filly, "Smith Creek Lagoriure," 150664, which won sixth prize as a two year old, unnecessary to say in extremely strong competition in both cases. These are owned and exhibited by C. D. Roberts & Sons, breeders and importers, Winnipeg.

It is also noted that the first prize and grand champion Clydesdale stallion at the International this year was beaten previously this fall at the Regina show by two stallions owned and exhibited by John Graham, Carberry. Mr. Graham's horses thus took first, second and championship over a horse afterwards placed at the top in Chicago where the Graham horses were not in competition.

The official statistics indicate the extent of the decline in horse breeding during the past year or two. The figures of 1920 on the basis of a June report show the horses of Manitoba to be divided as follows:—

	Number
Stallions, two years old and over	1,500
Mares " " " " "	158,114
Geldings " " " " "	141,246
Colts and fillies	55,768
Total	356,628

It is plain that the maintenance of horse stock must depend upon two things—breeding and importation. The number of colts and fillies under two years old, as reported during recent years, shows as follows:—

	As reported June 1920	As reported June 1919	As reported June 1918
Colts and fillies under two years—	55,768	72,112	67,426

Assuming that approximately one-half the 55,768 reported in 1920 were foals of this year, we have a foal crop of 27,884. As this number is less than one-twelfth the total horse population of Manitoba, it is evident that this rate of increase would not maintain our present horse supply.

The statement below, it will be observed, refers only to those horses that passed through the stock yards, St. Boniface. A large number were shipped to the western provinces which did not pass through the yards.

COMPARATIVE STATEMENT OF ORIGIN OF HORSES RECEIVED AT THE UNION STOCK YARDS, ST. BONIFACE.

Credit is due the Public Markets Limited for the figures in the tables as to origin and disposition of different classes of stock at the Union Stock Yards.

	Manitoba		Sask'wan		Alberta		East		B.C.		South U.S.A.		Totals	
	1920	1919	1920	1919	1920	1919	1920	1919	1920	1919	1920	1919	1920	1919
Jan.	134	38	88	25	34	.....	19	53	.....	.....	.....	.....	275	116
Feb.	77	76	101	46	86	24	20	269	.....	.....	.....	.....	284	415
March	164	49	140	89	36	.....	268	626	.....	.....	15	18	623	782
April	45	114	3	45	.....	.....	194	149	.....	3	6	27	248	338
May	42	35	7	55	13	18	47	21	.....	.....	.....	5	109	134
June	28	47	22	31	.....	28	60	19	.....	.....	14	.....	124	125
July	49	36	60	366	95	127	5	174	.....	.....	.....	.....	209	703
Aug.	80	35	60	437	35	586	5	8	.....	3	.....	.....	180	1,069
Sept.	40	283	5	630	46	294	.....	.....	.....	.....	.....	1	91	1,208
Oct.	56	62	106	245	26	185	.....	.....	.....	.....	.....	.....	188	492
Nov.	108	37	52	129	8	50	.....	5	.....	.....	.....	.....	168	221
Dec.	153	264	78	115	.....	.....	.....	43	.....	.....	.....	.....	231	422
Totals	976	1,076	722	2,213	379	1,312	618	1,367	.....	6	35	51	2,730	6,025

COMPARATIVE STATEMENT OF DISPOSITION OF HORSES, UNION STOCK YARDS, ST. BONIFACE

Month	LOCAL		EAST		WEST		South U.S.A.		Totals	
	1920	1919	1920	1919	1920	1919	1920	1919	1920	1919
Jan.	15	35	59	.....	196	69	.....	14	270	118
Feb.	40	25	19	89	149	307	44	.....	252	421
March	38	33	145	.....	422	721	.....	.....	605	754
April	42	10	5	38	243	287	.....	.....	290	335
May	13	42	1	13	95	79	.....	.....	109	134
June	24	46	7	41	65	35	.....	.....	96	122
July	7	166	.....	40	172	451	.....	.....	179	657
Aug.	22	113	42	76	98	736	.....	4	162	929
Sept.	60	127	.....	529	117	406	.....	.....	177	1,062
Oct.	7	63	17	257	118	179	.....	18	142	517
Nov.	33	148	88	260	83	125	.....	3	204	536
Dec.	....	41	96	198	114	209	.....	.....	210	448
Totals	301	849	479	1,541	1,872	3,604	44	39	2,696	6,033

Cattle.

Owing to the sharp decline in the prices of all beef producing cattle, and especially of the medium, poor and inferior classes, there has been a serious reduction in numbers. The long severe winter of 1919-20 also contributed to this reduction. The high price and extreme scarcity of feed and labor caused many to dispose of their cattle in poor condition, with the result that the markets became overloaded.

The price of hides falling from around 50c per lb. to 4c and 7c had its serious effect also.

During the year this Department has put out only 696 head under the different schemes for the building up of the cattle industry. It was not considered wise by the Department to promote undue investment in cattle under the market conditions which were prevailing. Frequently during the year I have been consulted by farmers, many of whom were prepared to pay their own money, as well as by those seeking an advance from the Government, as to the advisability of their buying. My reply was that no one was

warranted in buying at the declining prices; this saved many from possible heavy losses.

Tuberculosis in Cattle.

An Accredited Herds system is now carried on under the Federal Health of Animals Branch, which reports that up to the present 379 herds have been tested in the Dominion; of this number quite a number are in Manitoba. This seems to be the method best adapted to cope with the disease. This Branch will furnish our breeders information that will help them in this matter.

Dehorning and Prevention of Horn Growth.

Extremely gratifying results have followed efforts put forth by this Department during the past three years to promote dehorning and prevention of horn growth. Other agencies have cooperated and one in particular; namely, the Winnipeg Live Stock Exchange. There is a very noticeable increase in the number of hornless cattle coming to the terminal yards. When dehorning becomes general, it will, by hundreds of thousands of dollars, increase the value of cattle annually raised in Manitoba.

Bulls at Large.

"The Animals' Act" was amended at the 1919 session of the Legislature, fixing the penalty for allowing bulls over nine months' old to run at large at not less than $25.00 nor more than $50.00, and, in default of payment, imprisonment for not less than twenty days nor more than two months. In addition, the man so allowing a bull to run at large is liable to a civil action for damages. It is not necessary under this Act to take the animal to pound to impose the penalty. It is the duty of every citizen to assist in preventing scrub bulls running at large, and the penalty now ruling should be sufficient, if the law is properly enforced, to eliminate this nuisance.

Permitting of grade or inferior pure bred bull calves to remain bulls after, say, five months (they should be castrated at five weeks) is a practice that should be abandoned by every farmer and rancher. They not only bring a much lower price as stags, if castrated later, but are a menace to the herd. "The Animals' Act" should be enforced against the man who permits these young bulls to run at large, as readily as in cases where older bulls are allowed to run.

Dairy Cattle.

The Holstein cattle, brought by this Department from Oxford County, Ontario, in 1919, have proven excellent performers. A number of them sent to the Agricultural College are proving to be great producers. Another of these heifers, in the herd of Mr. Geo. Rice, Stonewall, in a seven days' test, gave 24.40 pounds butter, and in a yearly test, which will complete on December 28th, 1920, will give approximately 18,000 pounds of milk, or a daily average

for the full 365 days of 471/2 pounds. This means the production of about 17 times her own weight of milk in the year.

We have been able to place a number of good dairy type bulls in different parts of the Province during the year.

AVERAGE PRICES OF ALL GRADES OF CATTLE AT THE WINNIPEG (ST. BONIFACE) STOCKYARDS.

Cattle	1920	1919	1918	1917
Heavy Steers, over 1,200 lbs.	$10.00	$11.35	$12.95	$ 9.83
Butcher Steers, 1,000 to 1,200 lbs, Good	10.05	11.15	12.47	9.28
Butcher Steers, 1,000 to 1,200 lbs., Common	6.71	9.70	10.27	8.04
Butcher Steers, 700 to 1,000 lbs., Good	9.80	9.80	11.24	8.59
Butcher Steers, 700 to 1,000 lbs., Common	6.25	7.25	9.32	7.21
Butcher Heifers, Good	9.85	9.55	10.47	8.64
Butcher Heifers, Fair	6.40	8.18	9.14	7.61
Butcher Heifers, Common	4.97	6.25	7.82	6.56
Butcher Cows, Good	7.90	9.83	8.96	7.89
Butcher Cows, Fair	5.90	7.21	7.23	6.34
Bulls, Good	6.18	7.01	8.48	6.91
Bulls, Common	4.93	6.23	7.04	5.92
Canners	3.64	4.87	5.21	4.50
Oxen	6.32	7.24	7.85	7.29
Veal Calves, Beef	8.45	9.56	10.02	8.78
Grass Calves, Good	6.22	.....	6.70	.....
Grass Calves, Fair	5.37	.....	.....	.....
Stockers, 450 to 800, Good	.....	8.37	8.29	7.19
Stockers, 450 to 800, Fair	.....	6.60	7.20	6.19
Feeders, 800 to 1,100, Good	8.40	10.05	9.92	8.56
Feeders, 800 to 1,100, Fair	6.50	8.24	7.92	7.73

COMPARATIVE STATEMENT OF ORIGIN OF CATTLE RECEIVED AT THE UNION STOCK YARDS, ST. BONIFACE

Month	Manitoba		Saskatchewan		Alberta		B.C.		East		South		Total	
	1920	1919	1920	1919	1920	1919	1920-19		1920	1919	1920-19		1920	1919
Jan.	6408	6346	6589	8512	1520	1818	....	....	1	23	....	....	14518	16699
Feb.	3649	5273	2690	6095	747	1900	....	....	.....	26	....	....	7086	13294
March	5616	5223	2035	4878	98	186	....	....	14	153	....	....	7763	10440
April	6033	6179	1613	5380	58	868	....	....	29	186	2	....	7735	12613
May	6115	3479	1336	6010	23	280	....	....	16	73	....	....	7490	9842
June	5366	2100	3686	1466	454	143	....	....	25	123	10	....	9541	3832
July	8681	5172	7772	13769	93	4136	....	....	31	58	....	....	16577	23135
Aug.	15330	11598	18463	25224	2911	8196	....	40	83	30	....	....	36787	45088
Sept.	27306	11230	31708	17510	9142	9994	....	....	301	133	....	....	68457	38867
Oct.	28474	29591	30346	40105	7705	20017	....	....	351	287	....	....	66876	90000
Nov.	27490	16907	42684	36455	12810	16720	....	....	104	241	....	....	83088	70323
Dec.	5705	7421	11411	16347	4213	10042	....	....	.....	1	....	....	21329	33811
Totals	146173	110519	160333	181751	39774	74300	....	40	955	1334	12	....	347247	367944

COMPARATIVE STATEMENT OF DISPOSITION OF CATTLE, UNION STOCK YARDS, ST. BONIFACE

Month	Local		East		West		South U.S.A.		Totals	
	1920	1919	1920	1919	1920	1919	1920	1919	1920	1919
Jan.	6451	5411	3004	728	899	1426	3507	8230	13861	15795
Feb.	3614	3645	542	364	1115	1638	2466	7725	7737	13372
March	3526	3199	1195	363	1084	2018	1339	4622	7144	10202
April	4730	3565	783	302	2202	3852	287	5125	8002	12844
May	4176	3467	543	324	2131	4839	69	2258	6919	10888
June	4620	2318	1263	114	2869	780	573	117	9325	3329
July	7742	9189	4235	2863	2730	1805	2229	6785	16936	20642
Aug.	10884	16831	14131	3838	1637	2053	8872	17785	35524	40507
Sept.	18608	16941	30636	10421	760	2789	13035	16351	63039	46502
Oct.	20714	23823	28826	19778	2130	3520	14229	33575	65899	80696
Nov.	22774	21897	37931	18240	1485	4288	28542	30615	90732	75040
Dec.	6991	12685	8715	10642	1163	2881	5510	11958	22379	38166
Totals	114830	122971	131804	67977	20205	31889	80658	145146	347497	367983

COMPARATIVE STATEMENT OF DISPOSITION OF STOCKERS AND FEEDERS—UNION STOCK YARDS, ST. BONIFACE

Month	Manitoba		Sask'wan		Alberta		East		South		B.C.		Totals	
	1920	1919	1920	1919	1920	1919	1920	1919	1920	1919	1920	1919	1920	1919
Jan.	408	473	315	476	73	15	535	313	2316	4246	.....	.....	3647	5523
Feb.	630	754	403	683	.....	136	107	24	1946	3818	.....	.....	3086	5415
March	465	1267	436	607	107	68	289	105	954	3674	.....	.....	2251	5721
April	754	1999	859	1535	256	.....	375	119	177	3424	.....	.....	2421	7077
May	858	3448	1004	1404	129	21	330	254	.....	1318	.....	.....	2321	6445
June	1520	466	829	153	348	.....	473	26	282	52	.....	.....	3452	697
July	859	1271	891	384	652	.....	1290	352	1675	3723	.....	.....	5367	5730
Aug.	481	1120	428	490	1100	.....	3800	354	6174	10547	.....	.....	11983	12511
Sept.	607	1740	246	1096	.....	45	6382	719	12464	16192	.....	.....	19699	19792
Oct.	1038	1978	681	1159	465	.....	7082	1178	12688	25630	.....	.....	21954	29915
Nov.	1064	2351	505	1326	134	.....	8659	629	22142	20251	.....	.....	32504	24557
Dec.	860	1152	346	698	.....	.....	1943	1630	5017	12821	21	.....	8187	15701
Totals	9544	18019	6943	10011	3264	285	31265	5103	65835	105696	21	.....	116872	139114

Sheep.

The serious drop in the price of wool and mutton has had its deterrent effect on the sheep industry. On the other hand, good lambs have made an average around 11c per lb. This Department is gratified to know that its efforts are causing a number of farmers to keep a few good sheep, and the feeling is growing that they must do this to assist in the most profitable return from the farm. The advantage of sheep in keeping down weeds, fertilizing the land, and in a measure preventing the blowing of the soil, makes sheep indispensable.

A number of pure bred rams were distributed through the Province from the sale held at Brandon under the auspices of the Sheep and Swine Breeders' Association. Also this Department has located a number of pure bred sires for breeders and flock owners.

The Extension Service, through the Boys' and Girls' Clubs, is materially advancing the sheep industry, and we expect this movement to result in great benefit.

AVERAGE PRICES OF ALL GRADES OF SHEEP, WINNIPEG (ST. BONIFACE) STOCKYARDS.

	1920	1919	1918	1917
Lambs, Good	$11.04	$12.63	$15.48	$14.15
Lambs, Common	6.95	9.82	12.50	11.49
Sheep, Heavy	7.30	9.26	12.98	11.19
Sheep, Light	4.90	6.79	10.60	8.28

COMPARATIVE STATEMENT OF ORIGIN OF SHEEP RECEIVED AT THE UNION STOCK YARDS, ST. BONIFACE.

Month	Manitoba		Saskatchewan		Alberta		East		Totals	
	1920	1919	1920	1919	1920	1919	1920	1919	1920	1919
Jan.	3,191	365	451	517	.....	152	188	24	3,830	1,058
Feb.	1,277	350	101	53	86	.....	.....	3	1,464	406
Mar.	573	575	68	218	.....	.....	.....	4	641	797
April	176	162	26	17	.....	.....	.....	1	202	180
May	259	464	35	66	.....	.....	.....	.....	294	530
June	1,805	529	154	278	.....	.....	.....	.....	1,959	807
July	2,433	2,057	737	1,245	.....	.....	2	.....	3,172	3,302
Aug.	6,240	3,484	1,186	407	.....	1	220	128	7,646	4,020
Sept.	9,969	6,092	1,149	2,055	77	1,435	232	109	11,427	9,691
Oct.	12,393	12,654	3,548	5,137	312	194	364	104	16,617	18,089
Nov.	7,640	5,119	3,943	4,930	12	.....	156	88	11,751	10,137
Dec.	5,146	2,784	2,092	1,492	90	79	.....	.....	7,328	4,355
Totals	51,102	34,635	13,490	16,415	577	1,861	1,162	461	66,331	53,372

COMPARATIVE STATEMENT OF DISPOSITION OF SHEEP, UNION STOCK YARDS, ST. BONIFACE.

Month	Local 1920	Local 1919	East 1920	East 1919	West 1920	West 1919	South U.S.A. 1920	South U.S.A. 1919	Totals 1920	Totals 1919
Jan.	1,474	804	888	.....	958	233	473	.....	3,793	1,037
Feb.	1,114	474	.....	.....	189	58	.....	.....	1,303	532
March	355	372	.....	.....	366	.....	.....	.....	721	372
April	196	195	.....	.....	.....	44	.....	278	196	517
May	267	430	.....	.....	.....	142	.....	.....	267	572
June	1,523	640	.....	.....	.....	83	.....	.....	1,523	723
July	2,895	2,464	197	55	218	460	.....	.....	3,310	2,979
Aug.	5,911	3,478	105	190	1,090	201	.....	.....	7,106	3,869
Sept.	8,650	6,401	64	589	1,706	2,112	.....	.....	10,420	9,102
Oct.	14,791	11,685	191	.....	378	2,875	.....	77	15,360	14,637
Nov.	9,310	8,550	.....	.....	1,142	2,582	2,190	646	12,642	11,778
Dec.	9,243	5,735	.....	405	450	762	.....	448	9,693	7,350
Totals	55,729	41,228	1,445	1,239	6,497	9,552	2,663	1,449	66,334	53,468

Fencing Right-of-Way by Railways.

Railways are now fencing their rights-of-way, so as to turn sheep and swine. This has been done by the railways in each case where we have shown that the owner of the land has constructed a fence of this character on the other sides of any piece of land adjoining their right-of-way. This is proving of great benefit to these farmers.

Swine.

As predicted one year ago, there has been a dcrease in the number of hogs during 1920. The type of hogs, however, is improving; and a feeling in favor of each farmer keeping a few pigs is gaining ground. The price of coarse grains is becoming normal, in fact approaching pre-war prices, and the future looks reasonably bright for hog raising.

The winnings of the pigs shown at the Chicago International this year by the M.A.C. is just cause for satisfaction. The superiority of Manitoba bacon hogs was clearly established. The Animal Husbandry Department of Manitoba Agricultural College, in co-operation with the Manitoba Department of Agriculture, sent twenty-four hogs to compete, and won 11 first prizes, 7 second prizes, 4 third prizes, 1 fifth prize and 3 championships.

The Average Prices of all grades of Hogs at the Winnipeg (St. Boniface) Stock Yards

	1920	1919	1918	1917
Selects	$18.20	$18.37	$18.59	$15.32
Heavies	16.40	15.81	15.64	13.00
Lights	16.01	15.55	16.30	13.75
Sows	13.90	15.26	15.10	12.25
Stags	11.90	11.21	12.38	9.68

COMPARATIVE STATEMENT OF ORIGIN OF HOGS RECEIVED AT UNION STOCK YARDS, ST. BONIFACE

Month	Mantoba 1920	Mantoba 1919	Saskatchewan 1920	Saskatchewan 1919	Alberta 1920	Alberta 1919	East 1920	East 1919	Totals 1920	Totals 1919
Jan.	16,077	19,107	8,047	25,929	163	1,173	.....	35	24,287	46,244
Feb.	8,918	17,631	3,800	19,801	.....	5,222	.....	69	12,718	42,723
March	9,715	13,029	3,666	13,868	.....	1,765	.....	69	13,381	28,731
April	6,544	12,079	2,682	10,965	.....	309	.....	112	9,226	23,465
May	8,219	5,894	2,705	9,324	.....	110	74	39	10,998	15,367
June	9,396	10,185	5,262	7,020	23	671	10	87	14,691	17,963
July	9,559	13,517	5,223	14,448	359	337	48	99	15,189	28,401
Aug.	4,641	4,951	3,409	4,841	208	180	2	70	8,260	10,042
Sept.	4,242	2,636	1,081	1,476	56	9	41	25	5,420	4,146
Oct.	6,802	8,563	1,467	4,446	28	21	77	118	8,374	13,148
Nov.	9,418	11,708	2,690	6,626	7	19	18	147	12,133	18,500
Dec.	7,800	13,462	2,792	6,063	700	373	.....	.....	11,292	19,898
Totals	101,331	132,762	42,824	124,807	1,544	10,189	270	870	145,969	268,628

COMPARATIVE STATEMENT OF DISPOSITION OF HOGS AT UNION STOCK YARDS, ST. BONIFACE.

	Local		East		West		South U.S.A.		Totals	
Month	1920	1919	1920	1919	1920	1919	1920	1919	1920	1919
Jan.	21,424	35,794	481	9,268	2,223	961	.....	.....	24,128	46,023
Feb.	8,953	30,687	.....	10,558	3,817	1,098	.....	134	12,770	42,477
March	10,540	22,813	.....	5,295	2,467	375	.....	.....	13,007	28,483
April	8,498	23,116	.....	422	988	284	.....	.....	9,486	23,822
May	9,478	13,741	.....	972	1,478	834	.....	.....	10,956	15,547
June	13,544	13,713	.....	4,983	596	45	.....	.....	14,140	18,741
July	14,579	22,686	594	5,221	197	235	.....	.....	15,370	28,142
Aug.	7,174	9,875	1,048	43	.....	160	.....	.....	8,222	10,078
Sept.	5,086	4,438	.....	.....	85	.....	.....	.....	5,171	4,438
Oct.	7,505	12,242	135	.....	1,493	261	.....	125	9,133	12,628
Nov.	10,914	16,398	19	246	545	1,226	.....	299	11,478	18,169
Dec.	11,066	17,876	938	810	154	2,022	.....	288	12,158	20,987
Totals	128,761	223,370	3,215	37,818	14,043	7,501	.....	846	146,019	269,535

"The Brand Act."

Many inquiries have reached the Department regarding brands on stray animals, and I would like to point out the advantage of using a registered brand. The cattle owner who uses a brand which he has not registered in the Department is liable to be using a brand registered by someone else; and he is creating a very embarassing situation for himself, as the following shows:

Section 9, Clause 1 of "The Brand Act":—"The owner of any uncancelled brand shall have exclusive right to the use thereof, and such brand upon horses and cattle, except as provided in section 12 hereof, shall be prima facie evidence in any court in Manitoba that such animals are the property of the owner of such brand."

Section 12, above referred to, reads: "Upon every transfer of any cattle or horse marked with the recorded brand of the transferor, the transferor shall also mark his vent on the animal so transferred unless, at the time of such transfer, the said brand is also transferred to the transferee of the animal."

Venting of brands is most important in the best interests of brand owners. Much confusion may be avoided by this simple, yet effective precaution.

The fact that only 64 renewals were issued this year would seem to indicate the fact that many of our old time stock owners have disbanded their herds. As stated in last year's report, over 500 brands were subject to cancellation on December 31st, 1919, and every owner of these brands was notified by registered letter of the date of expiration; 72 of these registered notices were returned "uncalled for."

Again the fact that only 280 brands, including renewals, were registered during the year, as compared with 330 the previous year, would suggest that the live stock industry had suffered from prevailing conditions, falling prices, etc.

Numbers of brands issued by the Department during each of the following years are shown in the table below:

Year	Brands Issued	Year	Brands Issued	Year	Brands Issued
1903	59	1909	15	1915	110
1904	26	1910	13	1916	105
1905	30	1911	11	1917	173
1906	31	1912	19	1918	386
1907	26	1913	30	1919	330
1908	14	1914	35	1920	280
				1920 Vents	2

Goats.

Goat keeping is an industry worthy of the attention of our citizens. In many cases where a family is so situated that the keeping of a cow is impossible, a goat would furnish it with a class of milk which is especially adapted for the use of children—a class of milk impossible to procure otherwise. The absence of tuberculosis in the goat is generally accepted. This, in itself, should be sufficient to warrant the development of the industry. Besides, the goat could be kept to great advantage in districts entirely unsuitable for cows, both in rural districts and in the suburbs of our towns and cities.

Operation of the Stallion Enrolment Board.

The number of stallions enrolled in 1920 was 900, as shown in the table herewith, an increase of 82 over last year's enrolment.

Section "20 A" was incorporated in "The Horse Breeders' Act" in an endeavor to overcome the difficulty of obtaining evidence against owners of unenrolled stallions, but the Department still encounters this handicap and solicits the co-operation of all good citizens in an endeavor to prevent owners from travelling stallions without proper enrolment in the Department.

Section 3 clearly sets forth the duty of stallion owners, importers and breeders. If the law is properly enforced, there should be no difficulty in effectively eliminating the nuisance of unenrolled stallions in the Province.

Section 3: "It shall be the duty of the owner of every stallion standing or travelling for public service in Manitoba for remuneration, before commencing such business, to apply annually to this Department and to obtain a certificate of enrolment as hereinafter provided."

(a) "Every importer or breeder, before offering a stallion for sale, must have such stallion enrolled with the Department."

Stallions Enrolled in Manitoba in 1920.

Thoroughbreds	1	Suffolk	7	Belgian	53
French Coach	1	French Canadian	3	Percheron	310
Hackney	5	German Coach	2	Clydesdale	491
Shire	10	Standard Bred	17	Total	900

All of which is respectfully submitted,

W. W. FRASER,
Live Stock Commissioner.

Report on Operations under "The Settlers' Animal Purchase Act"

Hon. Geo. H. Malcolm,
Minister of Agriculture and Immigration.

Sir:—This is the fifth year of operation under the "Settlers' Animal Purchase Act." When the scheme was launched it was anticipated that it would serve a temporary need; and our expectations were justified.

There has been a marked increase in cattle raising in the *districts served under this Act not only through the cattle that were distributed to settlers, but also through a newly stimulated interest in the cattle industry, which seems to be prevalent at present. Practical indication of this fact is evidenced by the large quantity of butter shipped out of these districts, retaining in addition, a sufficient supply for home consumption, which was not the case prior to the inauguration of this scheme.

There has been a general improvement in the quality and breed of the cattle in these districts, not apparent before the "Settlers' Animal Purchase Act" was put into effect. There is now great need for better sires in the districts where cows have been supplied under this Act. The Dominion Government has done good work in loaning bulls to Associations, but the supply is inadequate, and I believe that a vigorous campaign should be conducted to encourage the purchasing of better bulls. In supplying cows we have not specialized in any particular breeds, but the bulk of the cattle delivered have been of the beef type, with the Shorthorn breed predominating. These districts have now reached a stage in cattle raising where if any pure bred sire is used, that district will soon become a centre for community breeding, and become well known for the breed adopted. This is a matter which could well engage the attention of the breed associations. Possibly financial assistance would be required to facilitate the purchase of these sires. At present a large number of scrub and nondescript bulls are allowed to run at large, which is a source of annoyance and a detriment to the stock-raising industry generally. While we have been doing what we can to prevent this situation continuing, the only remedy would be for the settler to buy better bred bulls.

There is abundance of feed in this territory, with the exception of the areas that were swept by prairie fires; and the settlers in these areas are able to procure feed from adjoining districts at a reasonable price.

Operations under this Act tend to afford more experience to the settler in cattle raising, and the community scheme has brought the experienced into touch with the inexperienced. Notwithstanding this fact, I believe that the Department might well engage in

*Notably the area between Lake Winnipeg and Lake Manitoba.

an extensive agricultural survey in this territory. Being a comparatively new district, many of the settlers are pioneers in farming; and while in the business of grain growing, they are anxious to combine stock raising with grain growing. An agricultural survey would indicate the most profitable system of farming for a settler to follow under his own peculiar local conditions. It is extremely advisable that immediate steps be taken to ascertain the grass most suitable to seed on areas where fire destroyed the vegetation beyond power of recuperation. If this land is allowed to remain otherwise barren, it will become covered with weeds, and, in addition to being non-revenue producing, will be a source of expense.

The districts in which the cattle put out under this Act are distributed, are remarkably free from contagious diseases. Occasionally there is an outbreak of Blackleg, but it is no more prevalent here than in other sections of the Province. Hemorrhagic Septicemia is rarely found, and supposed outbreaks of this disease have been pronounced by veterinarians to be cases of malnutrition rather than Hemorrhagic Septicemia.

The number of cows supplied this year is not as large as in former years, because the districts now are fairly well stocked with cattle. Applications coming in were not of such a nature as to warrant the shipping of cattle in car lots; therefore we supplied those requiring cattle from surplus stock in their district. Owing to the very severe character of last winter, many of the applicants were compelled to leave their homesteads during the past season and seek employment in the grain fields, to enable their families to have the necessaries of life. A portion of this district was also visited by fires. These circumstances entirely put an end to fall deliveries.

During the past year we have delivered 209 cows at an average price of $89.90, and transferred 45 cows, bringing our aggregate total of all distributions up to 4,859, which has been divided among 123 associations, with a total membership of 1,378. Estimations show that there should be in the neighborhood of about 15,000 calves, the progeny of these cows.

We made a fairly close inspection last fall and found the cattle in as good condition as could be expected, and with sufficient feed to put them through the winter.

Owing to the shortage of feed and the extreme weather last winter, also the loss by fire this fall, payments are not as good as in normal years, an experience which is reported to be quite general in other areas; and, because of these facts, we have not used any harsh methods to collect accounts. After a close survey of all these accounts, we are not prepared to say that any should be entirely written off.

Respectfully submitted,

S. G. SIMS,
Purchasing Agent Under Settlers'
Animal Purchase Act.

Report of Publications Branch

Hon. Geo. H. Malcolm,
Minister of Agriculture and Immigration.

Sir:—I have the honor to present herewith my fifth annual report.

During the past year there has been a decided increase in the demand for the publications of this department. This increase has arisen partially as a result of the establishment on the land of soldier settlers, with the consequent necessity for authoritative and intimately local agricultural information which that movement has naturally developed; but, in addition to this, an increased call has also sprung up from the fact that more and more of the farmers of the province, learning of the publications available, are making application for bulletins on various subjects.

This increase in demand must, I think, be regarded as a very healthy and encouraging sign. To the observer it will be patent that in Manitoba we are gradually passing from the pioneer stage of farming, and are settling down, somewhat slowly, but none the less surely, to the permanent stage. The period of readjustment visits many problems upon the farmer; some of these problems he himself raises voluntarily, and some of them, such as the menace of weeds and soil drifting which succeed too long a following of one type of farming, he has thrust upon him. Under the circumstances, the wise farmer seeks all the assistance possible from those in the Agricultural College and elsewhere who should be able to help him; and to furnish this help in concise printed form is a large part of the function of this branch.

Under these circumstances it has been particularly unfortunate that during the year there should have developed so great an advance in the cost of printing as to prevent the Department from continuing the work in a normal way throughout the entire year. Although this branch was permitted to overspend its appropriation somewhat, still several bulletin manuscripts prepared by the professors at the Agricultural College and dealing with subjects upon which almost daily enquiries are received, have been held over unprinted.

The advance in the price of printing during the year was probably close to fifty per cent., and although a decline during 1921 would seem to be in order, yet there is very little definite assurance that it will occur.

Another factor which increased costs during 1920 was the fact that in the middle of the year the Postmaster General suddenly cancelled all postage free privileges hitherto extended to Provincial Departments of Agriculture. It is to be hoped that the Post Office authorities may before long regrant the courtesies so long enjoyed by the Provinces, or at least so modify the postal rates as to make them cover only the cost of handling this class of matter. But up to the present this has not been done.

Publication of Bulletins.

During the year the following bulletins, most of them new but some of them revised and reprinted from former issues, have been published:

Extension Bulletin No.	Title	Author
12	Canning by the Cold Pack Method	Professors N. F. Rowe and C. H. Lee, M.A.C.
13	Common Diseases and Disorders of the Foal	Dr. C. D. McGilvray
20	Cheese Making on the Farm	I. Villeneuve, Dairy Branch
21	Better Farm Homes	Prof. L. J. Smith, M.A.C.
37	Farm Butter-Making	L. A. Gibson, Dairy Commissioner
40	Home Dressmaking	Miss Margaret Smith, Extension Service
45	The Pure Bred Poultry Industry	Prof. M. C. Herner, M.A.C.
46	Lessons in Millinery	Miss Agnes Campbell, Agricultural Extension Service
47	Beekeeping in Manitoba	R. M. Muckle, B.S.A. Special Lecturer in Beekeeping
48	Common Breeds of Poultry	Prof. M. C. Herner
49	Hand Selection and Harvesting of the Seed Plot	W. T. G. Wiener, B.S.A., M.A.C.
50	Rearing Dairy Calves	Prof. G. W. Wood, M.A.C.
51	Annual Pasture and Forage Crops for Manitoba	Prof. T. J. Harrison and J. H. Ellis, M.A.C.
52	Birds in Relation to Agriculture	Prof. V. W. Jackson, M.A.C.
53	Laundering and Dyeing	Miss Eleanor M. Groff, M.A.C.

Editions, either new or reprinted, have been issued during the year of the following short circulars:—

Series of five Circulars on Grasshoppers (for use in schools in grasshopper infested areas)	A. V. Mitchener, B.S.A., M.A.C.
Standards for Judging Vegetables	Contributed by Manitoba Horticultural and Forestry Association
How to Preserve Eggs	Prof. M. C. Herner, M.A.C.
Potato Top Diseases in July and August	Profs. V. W. Jackson and G. R. Bisby, M.A.C.
Chemistry of the Farm Water Supply	Asst. Prof. W. F. Geddes, M.A.C.
The Western Wheat-Stem Sawfly	A. V. Mitchener, B.S.A., M.A.C.

The printing of several other fairly large publications has been supervised, and part of the manuscript has been prepared. Some of these are:—

Annual Report of the Department of Agriculture and Immigration.

Annual Report of Manitoba Agricultural College.

Report of the Manitoba Dairy Convention.

Program of Manitoba Farm Congress.

"Meeting the Problems of Rural Life in Manitoba" (A popular interpretation of the services offered to the public by the Agricultural College and the Department).

Annual Agricultural Statistics Bulletin.

Departmental Periodical.

Commencing in January, 1920, the Department began the publication of a monthly series of bulletins bearing the general title, "The Agricultural Extension Service." Toward the close of the year it was felt that better value for the money could be had by altering the shape of the periodical; and at the same time a

change was made in the name, the present name being "Manitoba Agricultural Extension News." The purpose of this publication is to establish a definite and certain and continued connection between the Department and the Agricultural College, on the one hand, and certain portions of the public with whom it is desirable or necessary to co-operate, on the other hand. Through this series of prints much of the publicity work in connection with the Boys' and Girls' Clubs, the Agricultural Societies and the Women's Institutes is carried on. In addition, there is the publication of articles of a timely nature on many agricultural and home-making subjects. The editing and printing of this series has been part of the duties of this office.

Bulletin Distribution.

In the annual report of two years ago there was discussed very fully the general question of bulletin distribution. The most outstanding feature of this phase of the work during the past year has already been hinted at; namely, the largeness of the demand from soldier settlers. This office has sought to meet this demand as fully as possible, and appreciation of the publications of this department, in relation to the needs of soldier settlers and their wives, has been expressed freely not only by those engaged in soldier settlement work in Manitoba but also by a number of those engaged in this work in other provinces and also in a Dominion-wide way. The following is an extract from a letter by Mrs. Jean Muldrew, Director of the Home Branch of the Soldier Settlement Board. This was written in acknowledgement of receipt of a shipment of bulletins for distribution at a convention of soldiers' wives:—

"I want to thank you sincerely for your great kindness in sending the bulletins. If you could see the eagerness with which they were grasped by those soldiers' wives and the disappointment when I had not enough to go around, you would be rewarded for the sending. We expected fifty (wives at the gathering); we had seventy-two. The cook books, the dressmaking, the dairy and the poultry bulletins—the lack of enough of these was the greatest disappointment."

This letter is typical of many received.

Posters.

As in previous years, posters of a special nature were used on a number of different occasions. These related to such subjects as meetings to be held, potato improvement, production of infertile eggs, arbor day, the law respecting the running at large of male animals, etc. In addition, a monthly series of posters headed the "Manitoba Bank Bulletin Intelligence Service" has been forwarded to all the rural banks in Manitoba. The purpose of these posters is to announce coming events of agricultural interest, short courses, timely bulletins, special help along labor service lines and any other work which the Department or College may have in hand for the time being, as well as to disseminate reliable agricultural information which is of timely importance.

Crop Information.

The compiling and publishing of crop information, handled by this office, calls for a large amount of time and labor. The method of operation described somewhat in detail two years ago, need not be re-outlined. Suffice it to say that the co-operative arrangement existing between the Dominion Bureau of Statistics and this Department continues, and that the reports made during 1920 have probably been more complete and satisfactory than during any previous year. In June returns as to acreages sown to varous crops and numbers of live stock were received from almost seventeen thousand farmers of Manitoba, each reporting upon his own operations. Then at the close of the year, as in past seasons, we have gathered reports as to the out-turns from crop correspondents on the basis of one correspondent for each township. Though the system in vogue has been steadily improved from year to year, and though the annual crop bulletin in which the final findings issue is annually being demanded in greater numbers, yet some improvements are under contemplation which should considerably increase the value of our statistics work in years to come. The correspondence coming to this office suggests more and more the value which would attach to having reliable agricultural statistics on a more local basis. A reform to secure this result, while it would considerably increase the work of compilation, would furnish very useful information in connection with the proposed agricultural survey of the province, and would also have much independent value of its own.

Following the practise of recent years, we gathered a supplemental series of reports from a special set of crop reporters during the spring, summer and fall. These reports, which were collected and published in mimeographed letter form at intervals of about three weeks, gave to the public a sort of moving picture account of the progress of agriculture, and on different matters—such as the unusual situation in regard to the potato crop in the fall—they served a very useful purpose in setting before the public mind the situation just as it existed throughout the province. The demand for this crop letter service grows steadily.

Press Service.

Pressure of other tasks has prevented the usual amount of attention to general news letters for the press; yet to quite an extent this service has been maintained, and in a very encouraging way the papers not only of Manitoba but of Canada have made use of the information supplied.

Many special articles have also been prepared for and have been published in the non-English papers; and I can repeat the statement made last year that this class of publicity has been of much value. The Department, of course, could not undertake the publication of bulletins in all the different languages; but it is possible, however, through the medium of the non-English press, to keep fairly well before the leading foreign speaking groups at least some of the most outstanding suggestions for agricultural

improvement. I have had ample proof that these articles are appreciated. The titles of these articles published during the past year have been:—

Pork Making on the Farm.
Boys' and Girls' Clubs.
Care of Pregnant Mares.
Seed Grain.
Treat Your Seed Grain to Kill Smut.
How Farmers May Supply Their Own Beef During Summer.
Spring Care of Working Horses.
Setting Hens.
Spring Work in the Garden.
Weeds.
Sow Crops to be Cut While Green.
Calf Rearing.
Destroying Potato Beetles.
Three Garden Insects.
Preserving Eggs for Winter Use.
Canning Food for Winter Use.
Dyeing Garments.
Storing Vegetables for Winter Use.
Castration of Young Male Animals.
Milk an Unappreciated Food.

A line of work which requires and receives considerable attention is the preparation and revision of matter published in official and semi-official publications of various sorts. As a specific illustration, mention may be made of the booklet "Opportunities in Manitoba," published by Heaton's Agency, Toronto. About thirty thousand or more copies of this booklet are annually distributed by railway companies, immigration offices, etc., and as the information in relation to agriculture, to be of the greatest value, must be brought up to date and carefully revised each year, such a task must be given the very best of attention. This is only a typical case. The truth is that quite apart from the customary lines of immigration endeavor, there is a very large and useful work to be done along publicity lines in relation to the agriculture of the province; and that this work logically falls to this department.

Advertising.

During the year about the usual amount of attention was given to advertising. The advertising of the Department covers quite a number of projects, such as farm help distribution in our own province, securing of harvest helpers through advertising in the East, specific projects of agricultural improvement and general publicity for the province.

Miscellaneous.

Several miscellaneous tasks fall to the writer from time to time. These include occasional addresses, photography, and a few other duties.

Printing Handled.

During the year attention has been given to the printing of the following:—

	Individual Pieces
Bulletins	222,860
Booklets, Circulars and Printed Programs	54,000
Posters, Placards and Hangers	16,700
Folders	16,800
Printed Forms	30,500
Miscellaneous	158,700

Respectfully submitted,

GEORGE BATHO,
Editor of Agricultural Publications.

Report of Demonstration Farms Board

Hon. Geo. H. Malcolm,
Minister of Agriculture and Immigration.

Sir:—I herewith present the Annual Report for the Demonstration Farms Board for the year ending November 30th, 1920.

The Board.

The Demonstration Farm Board consists of the Deputy Minister, Mr. J. H. Evans, Chairman, in charge of live stock work, Mr. Robt. Milne, farmer, in charge of engineering, and T. J. Harrison, Agricultural College, secretary, and in charge of field crops.

Before any new work is undertaken in connection with any of the farms, it must come before a full Board meeting and be approved of by all the members.

In charge of each farm is a superintendent who is responsible for the carrying out of the instructions of the Board.

Farms.

There are two farms, one at Birtle and one at Killarney. The farm at Birtle is a typical half-section Manitoba farm, being developed along mixed farming ideas. The farm at Killarney is for the purpose of demonstrating fruit growing and vegetable gardening. Mr. William Pierce is the Superintendent at Birtle, and Mr. E. S. Hayter at Killarney. Mr. Walker, the previous Superintendent at Killarney, resigned in April and Mr. Hayter undertook the management on the 3rd of July.

Birtle.

Weather:—The weather during April was unusually cold, spring opening rather late. Seeding commenced on April 27th, with the soil in a poor condition for cultivation. We had two sharp frosts during the early part of May, and a sharp frost on August 20th; all grain cut after that date shows signs of frost. This, combined with rust, cut down the yield of threshed grains considerably. Wheat cutting commenced on August 16th.

Crops:—Rotation work was started this season, 50 acres being seeded with a mixture of alfalfa, meadow fescue and western rye. This was seeded with a nurse crop of wheat and looked very promising in the fall.

50 acres of Summerfallow Wheat yielded 22 bus. per acre.
35 acres of Second Year Wheat (fall plowed) yielded 17 bus. per acre.
35 acres of Oats were threshed and yielded 1,372 bushels.
10 acres of Barley were threshed and yielded 150 bushels.
1 acre of potatoes (Irish Cobbler) yielded 180 bushels.

Livestock, Horses:—There are seven horses on the Birtle farm, of these three are heavy grade mares, three geldings and the driver. **Cattle:**—Sixteen head of cattle are on the farm; three pure-bred Shorthorns and three good grades headed by a pure-bred Shorthorn bull, the balance being young stock. **Pigs:**—Our herd consists of 39 head of various ages. Five of these are brood sows headed by a Yorkshire boar. **Sheep:**—The grading up of ewes with a pure-bred Oxford ram was continued during the past season; the offspring showing the wisdom of this course.

Poultry:—Two breeds of poultry are now at the farm, Barred Plymouth Rocks and White Wyandottes. The birds are housed in a permanent poultry house, which was erected during the summer.

Improvements:—A new hog-barn was erected. It is 16ft. x 32ft. and has four pens, with feed room and bedding in loft. A poultry house 16ft. x 32ft.

of the straw loft cotton front type was erected and is giving splendid results this winter in vigorous birds and winter eggs. The old barn was placed on a solid concrete foundation and fitted for a granary. It has five bins with a capacity of 300 bus. each, also space for crusher and crushed feed. The house which was on the farm when purchased was remodelled and fitted up as a four roomed cottage for a married man. A Lalley Farm Lighting system was installed in March and has given good satisfaction, all buildings being lighted from this source.

Breaking:—Twenty-five acres of poplar and willow scrub land were broken and put in first class condition for wheat next year with 15-27 tractor and 24-inch scrub breaker. The largest trees were pulled with engine and cable.

Other Improvements:—The fencing is now almost complete, seven foot cedar posts and No. 9 woven wire being used with one strand of barbed wire on top.

A well 242 feet deep was drilled and put in working order early in the season. This has been of great benefit to the farm, giving us practically one day more per week on the land than when hauling water, which took one man and team two hours per day.

A start was made toward beautifying the farmstead. The lawn site was put in first-class shape and seeded, also a perennial border with lilac and honeysuckle at each end. A windbreak of willow and ash was planted on the north side.

Killarney.

Seasonal Conditions:—The climatic conditions of the past season have been, without question, ideal for the growing and cultivation of fruit. The heavy snowfall of last winter, coupled with the fact that snow covered the ground before much frost entered, enabled all fruit trees, both large and small, to winter over, with little, if any, killing back. This spring the snow slowly disappeared, and, contrary to expectations, did not create flooding conditions. This enabled the soil to absorb all the available moisture. No spring frosts serious enough to hurt were recorded.

This summer, although on the whole dry, was to some extent favorable for the growth of trees. The melting snow of spring and rainfall of early summer gave the trees ideal conditions for rapid growth while the extreme dryness of the latter part of the summer checked the production of the late wood and enabled the wood produced in the early summer to ripen up, thereby leaving the trees in better shape to survive the coming winter.

The first fall frost was recorded on the 16th October, there being one degree of frost on that date. Work on the land ceased on the 4th of November. The first snow fell on the 8th of November, from which date the temperature dropped to a few degrees below zero.

Excessive winds did not do any damage during the summer. There were, however, two or three very heavy wind storms during the fall months.

Livestock, Horses:—Three horses were sold during the year and one team of brood mares were purchased. One of these mares is in foal. We have also a two-year old colt. **Cows:**—Four grade Holstein cows comprise the cattle at this station. **Pigs:**—We have on hand 29 pigs.

Poultry:—The poultry comprise thirteen Barred Rock hens and eleven White Leghorn hens.

Bees:—A nucleus and a queen were purchased on the 28th August. The bees arrived in good shape, and have since done well.

Fruit Trees:—As before mentioned, the season has been ideal for the growth of fruit trees. Much new wood was grown and trees seem to be in a healthy condition. It was, however, necessary to spray the Plum trees for green aphis, which were very bad. The Cherry trees were also attacked late in the season with Powdery Mildew. Nothing was done for this owing to the lateness of the attack. Considerable pruning was done during the summer. This was necessary in order to cut out much dead wood and suckers and to head back and thin out many trees which were growing wild. Considerable harm was done to the fruit trees last winter by rabbits, but most of the trees have overcome the injury due to the splendid growth made this season.

One Apple tree bore fruit this year. With a favorable season next year, there should be a number of trees bearing fruit.

Two varieties of Plums are being grown at present. A good crop was

secured although there were only six trees bearing this season. It was observed that the Aitken bore fruit of much superior quality but the yield was considerably below that of the Cheney. Quite a large number of Compass Cherry trees bore fruit, and this particular variety would seem to be a very desirable tree for the average farm home, being both hardy and productive.

The small fruits wintered through the extremely cold weather of last year exceedingly well, and started in the spring in a vigorous manner. Much fruit was borne by the bushes and the following notes, taken in the field, give some idea of the adaptability and suitability of the different varieties:—

Currants, White Cherry:—Wintered through with some killing back. Medium growth during summer. Fruit of good size and quality but poor yield **Red Grape:**—Wintered through in good condition. Fruit good quality but disappointing yield. **New Red Dutch:**—Wintered through with some killing back. Yield good but fruit of medium quality. **Raby Castle:**—Wintered well. Good growth during summer. Yield was medium but fruit small. **North Star Red:**—Wintered well. Good growth. Medium yield but fruit small. **Eclipse:**—Wintered well but medium growth during summer. Yield was medium but fruit small. **Black Top Giant:**—Wintered through with some killing back. Medium growth during summer. No fruit. **Black Naples:**—Wintered well. Heavy growth during season. Good yield of fruit of good quality. **Perfection:**—Wintered well. Medium growth with good yield of large high quality fruit. **Crandal Currant:**—Wintered well. Medium growth with good yield of large fruit of high quality.

Gooseberries, Carrie:—Good growth during season. Good yield. **Downing:**—Very little growth during season. No fruit. **Houghton:**—Wintered well. Good growth and yield.

Although side by side, it was observed that the Carrie was not attacked by plant lice whereas the Houghton was badly attacked.

The varieties which can be recommended for this district are:—White Cherry Currant, Perfection Red Currant, Black Naples, Crandal Currant (hardy and yields a very large fruit but fruit ripens up singly. This of course, gives fruit for a considerable period).

Strawberries yielded well and especial mention must be made of the Progressive Everbearing variety. This variety was still bearing large luscious fruit on October 11th.

It is the intention to extensively develop fruit growing at this station during the coming years and to continue doing so until practically the whole farm is down to fruit and horticultural crops.

Potatoes:—The yield of potatoes was only medium. Owing to the continued drouth during August and September, the tubers did not fill out and the tops died. Later rains coming in October caused the tubers to sprout and green tops were again formed. It was necessary to dig the potatoes in order to save the sprouting tubers. The potato beetle was very active during the summer making it necessary to spray four times. From requests made by farmers and others, it is evident that there is much work to be done with potatoes, especially in the production of good seed for distribution. With this object in view we have purchased fifteen bushels of northern grown certified seed (Irish Cobblers) for planting next year and we also intend putting in about five acres of Early Ohio.

Field Crops:—All field crops suffered from drouth. In all cases the yield was low and the quality of grain was poor with low weight per bushel. Corn was especially poor throughout the district. The average height on the farm was four feet.

Sweet Clover:—Sweet clover yielded one ton and seventy-five pounds cured hay per acre. We have not had any difficulty in getting our stock to eat this hay. The cows clean up all that is given them. This is especially interesting as the hay was a little too ripe when cut, with the result that the stalks were quite woody. Sweet Clover does exceptionally well in this part of the Province both as a feed and soil renovator. After the hay was taken off the Sweet Clover was allowed to grow until a dense mat was formed, which was then plowed down.

All of which is respectfully submitted,

T. J. HARRISON.
Secretary Demonstration Farm Board.

Report of Employment Service of Canada

(Manitoba Branch)

Hon. Geo. H. Malcolm,
Minister of Agriculture and Immigration.

Sir:—I have the honor to present herewith the second annual report of the Manitoba Branch of the Employment Service of Canada for the fiscal year ending November 30th, 1920.

The volume of business transacted has largely increased, and the interest in the Service on the part of the citizens generally, and of employers of labor in particular, has reached a much wider range.

There are still some handicaps under which the Service is operating, but no doubt these will gradually be eliminated. When this has been accomplished, the Service will be in a position to effect better results, not only in the way of placements, but in the way of gathering more complete statistics concerning employment, unemployment and opportunities for employment.

This year, having been a period of new undertakings and in some instances of experiment, perhaps a brief statement of the work of each office might prove the best kind of report at this time.

THE PAS.

When the Employment Service was first inaugurated in this province, the Department of Soldiers' Civil Re-establishment was operating employment offices at several places other than where the province had offices. These places were Deloraine, Transcona and The Pas. When the D.S.C.R. withdrew from the field of employment early last summer, the Deloraine and Transcona offices were closed. The office at The Pas was continued by the Manitoba Branch of the Employment Service. This office, however, was taken over only temporarily to the end of 1920, with a view to finding out if such an office were actually required at The Pas. The experiment has been fairly tried, with the result that the office is to be closed at the end of the current year.

DAUPHIN.

The Dauphin office has been of good service and has increased to a considerable extent its amount of work, especially with the farmers to the west and north-west of Dauphin, as well as in the immediate vicinity of that town. The cost per placement has been high at this office, but a large portion of these placements were of apermanent nature. In a measure this compensates for the added expense.

BRANDON.

In spite of the fact that the superintendent of the Brandon office has suffered from ill health for a long time, this office has done good work. The placements made this year almost double the number for last year. Co-operation on the part of employers in the city of Brandon is becoming much heartier than when the office was at first operated.

PORTAGE LA PRAIRIE.

There has been a keen interest in this office since its inception on the part of employers both in Portage la Prairie and the country district throughout which its work extends. This may be accounted for, apart from the efficiency of the superintendent of the office, by the fact that the municipality of Portage la Prairie has a share in the expense of the office; or rather that

body has provided gratis the office in which the Employment Service is located in that city. The placements from this office were almost two thousand over the number for last year.

WINNIPEG.

The work of the Winnipeg offices has been interesting because it has been growing, and in large measure has been very satisfactory. Three new branches of the Service have been opened, namely: one for Professional and Business Men, one for Handicapped Men and one for Business Women and Household Workers.

Perhaps the most interesting feature of the work during the year was the Survey on Employment of Junior Workers made in the city of Winnipeg by J. M. Wyatt, Junior Employment Specialist of the Labor Department at Ottawa. A questionnaire was sent to the employers in the city, and another to the boys and girls in employment. Replies were received from 5,012 of these junior workers. Complete information in regard to the number and distribution of junior workers was not obtained, but reports were received from almost all the larger industries, and definite information was received from over 1,400 manufacturing plants, business houses, and wholesale and retail stores. No effort was made to secure reports concerning junior workers who are in household service. As a result of the survey, it was evident:

1. That a large number of employers are very sympathetic to the contemplated plans on behalf of the young workers.

2. That young workers not only need to be helped in the early stages of their industrial career, but also that they wish to be helped. Many expressed their desire to take advantage of educational classes, which would assist them either in their present work or fit them for the work in which they wish to engage.

3. Because there has been no source of information regarding opportunities for employment for juniors, many boys have secured other work than that which they desire and are fitted for.

4. Positions were vacant because boys and girls of the right type could not get in touch with these vacancies.

A great piece of work has been begun. The province of Manitoba has cause to be proud of being the first to commence this, which in time if properly developed will do much to solve the problem of unemployment.

Below is a table of the placements made from the offices.

	Placements For 1920
Winnipeg, 439 Main St. Farm Help, Male	20,381
Winnipeg, 220 Bannatyne Ave. Trades and Labor	16,995
Winnipeg, 177 Henry Ave. Construction and Bush Work	17,879
Winnipeg, 216 Bannatyne Ave. Women Day-workers, Cooks, Domestics, etc.	22,983
(*) Winnipeg, 210 Montreal Trust Bldg. Business Women and Household Workers	830
Brandon	4,326
Portage la Prairie	7,018
Dauphin	1,173
(†) The Pas	1,028
Total	92,613

All of which is respectfully submitted,

J. A. BOWMAN,
Superintendent.

(*) Ten months.
(†) Six months.

Report of the Game Branch

Hon. Geo. H. Malcolm,
Minister of Agriculture and Immigration.

Sir:—I have the honor to submit the annual report of the Game Branch for the year ending November 30th, 1920:

Literature.—Game Literature was distributed as follows:—Game Acts, 6,000 copies; Posters, 2,500; Maps, 3,000; Circulars, 8,250.

Game Birds Placed in Cold Storage by Hunters—Prairie Chickens, 1,812; Partridges, 156; Snipes, 27; Plovers, 3; Ducks, 6,491; Geese, 3; Cranes, 4; Grouse, 18.

Export Permits Issued Without Fee to Non-Residents (as per Sub-Section 2 of Section 13)—Moose carcasses, 6; Jumping Deer carcasses, 3; Ducks and Geese, 40.

Export Permit with Fee—Moose heads, 91; Elk heads, 12; Jumping Deer heads, 28; Cariboo heads, 1; Moose horns, 15; Elk horns, 2; Jumping deer horns, 3; Moose hides, 366; Jumping Deer hides, 76; Cariboo hides, 1; Moose scalps, 9; Elk scalps, 1; Deer scalps, 3.

(*) **Convictions up to April 30** — The number of convictions under the "Game Act", up to April 30th, were 38. Fines imposed, $1,475. Costs, $440.00.

Confiscations up to April 30—Muskrat pelts, 158; Beaver pelts, 2; Traps, 13; Partridges, 70; Moose (quarters), 6; Moose, (pieces), 8; Elk (carcass), 1; Elk (hide), 1; Rifle, 1.

Convictions May to November.—There were 83 convictions under the jurisdiction of Colonel J. G. Rattray, from May 1st to November 30th. Fines imposed, $20,260.00.

Confiscations, May to November:—Muskrats, 128; Beavers, 43; Fox (red), 1; Skunk, 1; Wolf, 1; Traps, 70; Rifles, 20; Shot Guns, 15. Total number of convictions for the year, 121. Total fines imposed during the year, $21,735.00.

REVENUE FOR 1920

Resident Big Game Permits, 4,982, at $4.00	$19,928.00
Resident Game Bird Permits, 10,008, at $1.00	10,008.00
Resident Trappers' Permits, 2,204, at $2.00	4,408.00
Resident Dog Trainer Permits, 1, at $10.00	10.00
Resident Fur Traders' permits, 107, at $10.00	1,070.00
Raw Fur Merchant or Traders' permits, 241, at $10.00	2,410.00
Travelling Agent, 25, at $10.00	250.00
Export permits, at 25c. and 10c.	83.60
Other receipts	4.52
Confiscated hides	151.35
Interest	27.16
Special Beaver permits, at $1.00 per hide	878.00
Tanners' permits, 3, at $10.00	30.00
Fur Farms, 2, at $5.00	10.00
Cold Storage, 6, at $5.00	30.00
Raw Fur Buyer, 1, at $25.00	25.00
Non Resident Big Game permits, 18, at $25.00, 15 at $15.00	675.00
Non-Resident Game Bird permits, 24 at $10, and 12 at $25.00	540.00
Non Resident Trappers permits, 6 at $100.00, 19 at $25.00	1,075.00
Non-Resident Fur Trader, 5, at $50.00	250.00
Non-Resident Dog Trainer, 6, at $20.00	120.00
	$41,983.63

(*) On May 1st prosecutions under the Game Protection Act were transferred from the Game Branch to the Provincial Police.

Brought forward	$41,983.63
Royalty on Hides and Pelts	20,014.60
Fines on 121 convictions	21,735.00
	$83,733.23

The inspectors under the jurisdiction of Col. J. G. Rattray, Commissioner of Manitoba Provincial Police, report the supply of game as follows:—

Inspector Wood, Southern Judicial district.—**Big Game**—Moose and elk are not found in this locality. Jumping Deer, plentiful. **Game Birds**—Ducks, plentiful. Geese, plentiful. Plovers, plentiful. Snipes, plentiful. Woodcocks, plentiful. Yellowlegs, plentiful. Prairie chickens, plentiful. Partridges, few. Grouse, few. **Fur Bearing Animals**—Beavers, few. Minks, few. Foxes, few. Mostly in Turtle Mountain reserve. Lynx, few. Muskrats, fair around Whitewater Lake.

Inspector Morris, Northern Judicial District.—**Big Game**—Moose, good supply. Elk, plentiful. Jumping Deer, good supply. **Small Game**—Ducks, plentiful. Geese, scarce. Plovers, scarce. Yellowlegs, very few. Prairie Chickens, plentiful. Partridges, very good. Grouse, scarce. **Fur Bearing Animals**—Otter, few. Beaver, fairly plentiful. Fisher, few. Marten, few, Mink, few. Beaver, fairly plentiful. Muskrats, fairly plentiful.

Inspector W. G. Clark, Eastern Judicial District, reports as follows: —**Big Game**—Moose, normal. Elk, some herds. Jumping Deer, normal. Cariboo, scarce. **Small Game**—Ducks, plentiful. Geese, few. Plovers, scarce. Snipes, scarce. Woodcock, scarce. Prairie Chickens, plentiful. Partridges, few. Grouse, normal. **Fur Bearing Animals**—Otter, few. Beaver, plentiful. Fisher, few. Mink, few. Fox, decreasing. Muskrat, decreasing, owing to heavy trapping of the past season.

J. K. Foster, Western Judicial District, reports as follows:—**Big Game**—Moose, very few. Jumping Deer, few. **Small Game**—Ducks, plentiful. Geese, few. Plovers, few. Snipes, few. Woodcocks, few. Prairie Chickens, plentiful. Partridges, few. Grouse, plentiful. **Fur Bearing Animals**—Otters, few. Beavers, plentiful. Mink, plentiful. Foxes, few. Lynx, few. Muskrats, plentiful.

Inspector Martin, Dauphin District.—**Big Game**—Moose, plentiful. Elk, fair supply. Jumping Deer, plentiful. Cariboo, very scarce. **Small Game**—Ducks, plentiful. Geese, fair. Plovers, scarce. Snipes, fair. Woodcocks, very scarce. Yellowlegs, fair. Prairie Chickens, plentiful. Partridges, plentiful. Grouse, fair. **Fur Bearing Animals**—Otters, very scarce. Beavers, plentiful. Fisher, very scarce. Pekan, very scarce. Sable, very scarce. Marten, fair. Minks, fairly plentiful. Foxes, fair. Lynx, very scarce. Muskrats, fairly plentiful.

Inspector Kitson, Central Judicial District, reports as follows:—**Big Game**—Moose, scarce. Elk, scarce. Jumping Deer, few. **Small Game**—Ducks, decreasing. Geese, decreasing. Plovers, decreasing. Snipes, decreasing. Woodcocks, decreasing. Prairie Chickens, plentiful. Partridges, scarce. Grouse, plentiful. **Fur Bearing Animals**—Otter, scarce. Beavers, plentiful. Fisher, very few. Marten, very few. Minks, scarce. Foxes, scarce. Lynx, decreasing fast. Muskrats, decreasing.

F. J. Hogan, Game Guardian, The Pas, reports as follows:—**Big Game**—Moose, very plentiful. Jumping Deer, very plentiful. Cariboo, very plentiful. **Small Game**—Ducks, very plentiful. Geese, very plentiful. Partridges, very plentiful. Prairie Chickens, on increase. Ptarmigan, on increase. Grouse, increase. Although of the above animals and birds a great number are taken each season, the supply does not seem to decrease. **Fur Bearing Animals**—Muskrats, slight decrease. Foxes, on the increase. Wolves, increasing rapidly. Weasels, increasing. Minks, increasing. Rabbits, increasing rapidly. — Taken as a whole, all fur bearing animals north of the 53rd parallel are increasing.

Supplementary Report for 1919.

Because of the fact that the Resident Trappers' and Big Game hunting licenses are issued at about the close of the season, it has always been impossible, before the close of the current fiscal year, to receive from the holders thereof complete returns as to the number of animals taken under these licenses. The completed data for the year, in these matters, are, therefore, compiled later and submitted in the report of the year following. The figures below constitute the complete returns for the year 1919 in these matters:

Trappers' licenses issued in 1919	2,420
Returns	1,965
Delinquents	455—2,420

Number of animals trapped on the above licenses:

Otter	85	Skunk	454	Lynx	187
Beaver	776	Marten	1,201	Ermine	5,095
Mink	2,485	Muskrat	109,286	Badger	4
Fisher	245	Fox	351	Bear	39
Pekan	15	Wolf	400	Wolverine	10

Special Beaver licenses granted in 1919	148
Number of beavers trapped	878
Big Game licenses issued in 1919	5,124
Returns	4,694
Delinquents	430—5,124

Occupation of Big Game license holders (1919) as follows:

Farmers	3,322	Indians	23
Various occupations	1,090	Delinquents	430
No occupation	259		
			5,124

Number of animals taken on above licenses (1919):

Male Moose	2,018	Female	2
Female Moose	4	Cariboo	28
Male Jumping Deer	604	Female Cariboo	None

Respectfully submited,

A. M. COLE,
Clerk Game Branch.

Report on Operations under the Co-operative Associations Act

Hon. Geo. H. Malcolm,
Minister of Agriculture and Immigration.

Sir:—I have the honor to submit herewith a list of the Societies at present registered under the Co-Operative Associations Act (1916).

During the year nine new societies were registered in the Department. One was dissolved.

List of Societies and Date of Registration.

The total list of societies now registered is,—

1916—Aug. 21—Dugald Co-Operative Society Ltd., Dugald.
1917—Mar. 19—Basswood Co-Operative Society Ltd., Basswood.
Apr. 30—Ruthenian Farmers Co-Operative Society Ltd., Sunville.
May 29—Mulvihill Grain Growers' Co-Operative Society Ltd., Mulvihill.
Sept 28—Hazelridge Grain Growers' Co-Operative Society Ltd., Hazelridge.
Dec. 3—Hunterville Co-Operative Association Ltd., Rapid City.
1918—Feb. 14—Kenville Co-Operative Association Ltd., Kenville.
Mar. 6—Manitoba Agricultural College Co-Operative Association, Winnipeg.
Mar. 8—Glenella Co-Operative Society Ltd., Glenella.
Sept. 8—Alexander Co-Operative Society Ltd., Alexander.
Oct. 1—Moline Co-Operative Society Ltd., Moline.
1919—Feb. 13—Keyes Co-Operative Trading Association Ltd, Keyes.
April 22—Arborg Co-Operative Association, Ltd., Arborg.
Apr. 22—Ochre River Co-Operative Association Ltd., Ochre River.
June 16—Elm Bank Co-Operative Association Ltd., Starbuck.
July 10—Rufford Co-Operative Association Ltd., Rapid City.
Aug. 7—St. James Veterans' Co-Operative Association Ltd., St. James.
Sept. 22—West Kildonan Co-Operative Association Ltd., West Kildonan.
Oct. 3—St. John's Veterans' Co-Operative Society Ltd., Winnipeg.
Oct. 22—Plumas Farmers' Co Operative Society Ltd., Plumas.
Oct. 27—Brooklands and Weston Co-Operative Society Ltd., Winnipeg.
1920—Feb. 2—Brandon Veterans' Co-Operative Society Ltd., Brandon.
May 5—Belmont Co-Operative Association Ltd., Belmont.
July 8—Co-Operative Stores Ltd., Winnipeg.
Sept. 25—Ukrainian Co-Operative Labor Store, Ltd., Portage la Prairie.
Oct. 9—Austin Co-Operative Society Ltd., Austin.
Oct. 16—Rathwell Co-Operative Society Ltd., Rathwell.
Nov. 14—Starbuck Co-Operative Association Ltd., Starbuck.
Aug. 17—Manitoba Co-Operative Dairies Ltd., Winnipeg.

Respectfully submitted,

J. P. GRANT,
Registrar.

The Agricultural Extension Service

PERSONNEL

Hon. Geo. H. Malcolm, Minister of Agriculture and Immigration.
Jas. H. Evans, Deputy Minister of Agriculture and Immigration.

EXTENSION COUNCIL

Prof. John Bracken, Pres. M.A.C Chairman.
R. Fletcher, Deputy Minister of Education.
J. H. Evans, Deputy Minister of Agriculture
Miss Kelso, Director, Home Economics, M.A.C.
R. B. Vaughan, Director, Technical Education.
Mrs. D. Watt, President Women's Institutes.

S. T. Newton, Superintendent, Extension Service.

REGULAR STAFF OF EXTENSION SERVICE

S. T. Newton, Superintendent.
N. C. Mackay, Assistant Superintendent.
H. E. Wood, Director, Boys' and Girls' Clubs.
Edith Gray, In Charge of Girls' Club Work.
J. H. Kiteley, Specialist Field Crops and Bees.
J. E. Bergey, Specialist Poultry Raising.
Gertrude Dutton, Acting Supervisor, Home Economics.
Margaret Smith, Specialist Dressmaking.
Bertha M. Price, Specialist Dressmaking
Winnifred Beech, Specialist Dressmaking.
Agnes Campbell, Specialist Millinery.
Elizabeth Blackburn, Specialist Millinery.

AGRICULTURAL REPRESENTATIVES

N. C. McKay, Director, Winnipeg.
J. R. Bell, Portage la Prairie.
E. R. Hall, Morden—Stanley, Pembina and Louise.
F. H. Newcombe, Selkirk—St. Andrews and St. Clements.
E. G. Wood, Hamiota—Miniota and Blanchard.

T. A. Johnson, Deloraine—Cameron, Brenda and Winchester.

LECTURERS AT EXTENSION SCHOOLS AND INSTITUTE MEETINGS

December, January, February and March.

D. E. McKenzie, Dairy Branch.
J. R. Sweeney, Dairy Branch.
G. H. Jones, Live Stock.
Ira Montgomery, B. and G. Clubs.
W. E. Watson, Dom. Dept. Agr.
R. Muckle, Bees and Sheep.
Howard Cross, Poultry.
B. Picha, Dairy Cattle.
Melville Smythe, Gas Engines.
J. S. Cowan, Gas Engines.
H. Woodcock, Gas Engines.
E. Bjork, Gas Engines.

Report of Agricultural Extension Service

Hon. Geo. H. Malcolm,
Minister of Agriculture and Immigration.

Sir:—I have the honor to present herewith the annual report of the Agricultural Extension Service Branch.

Brief History of the Development of Agricultural Extension Work in Manitoba

What is now known as the Agricultural Extension Service developed from the old Farmers' Institute and Agricultural Societies organization. Never had the Farmers' Institute movement reached large proportions, and it was eventually absorbed by the Agricultural Societies.

In the early days funds for agricultural education purposes were not very plentiful in Manitoba, and when the Agricultural College was established in 1907 a milestone was reached. Funds were still scarce, but at first there was only one class, then two, and so on; and the members of the College staff found time to appear before a considerable number of rural audiences. As the number of College classes increased and the demand for research and experimental work became more insistent, the outside work could not be handled as effectively as before.

In 1913 the Agricultural Instruction Act was passed, and in 1914 considerable funds became available for instruction and demonstration in Agricultural and Home Economics, and an Extension Branch was organized to develop the field work made possible through these funds being provided. In 1915 the name was changed to the Agricultural Extension Service.

The work was hardly started when the war broke out, and very soon the College was working short handed by reason of several members of the staff having enlisted, and it was impossible to give much assistance in carrying on the field work, particularly while the College was in session. This made necessary the employment of temporary help, and a little later the first permanent member of the staff was appointed for Home Economics work. Soon afterward the first district representatives were engaged, and gradually as the needs of the province became better known the number of employees in extension work has increased until we now have a permanent staff of eighteen and during the winter months when short courses and lectures are in demand a dozen additional lecturers and demonstrators are engaged. Besides these, the Dairy Branch loans us three men for most of the winter. The Live Stock Branch assists when possible, and the Agricultural College gives a great deal of assistance, especially during the summer months.

Change of Location.

As the work of both the College and the Extension Service developed, and as the number of outside lectures became greater and the number of College lecturers for outside work became fewer, it soon became apparent that the Extension work could be handled much more efficiently if the office were more accessible to those who were actually doing the work in the country. After very careful consideration, it was decided in the fall of 1917 to locate the office in the Legislative Buildings. Stated briefly, the principal reasons for the change are as follows:

1. **For the Convenience of the People of the Province.**—A great many people living in Manitoba have occasion to come to Winnipeg on business, and when in the city they can give personal attention to any business which they have with the Extension Service. Very few of these people would be able to spare the three hours which would be required to go to the College, and experience has shown that ten people call at the office now for every one that called previously. As the Extension Service has a direct financial connection with close to 500 rural organizations, this convenience means a great deal to those people who for the most part are rendering voluntary service to the communities which they represent, and, again, the value of personal acquaintance with people on whom it is necessary to depend for making arrangements for meetings in the country, etc., can scarcely be estimated.

2. **For the Convenience of the Extension Staff.**—It is practically impossible for members of the regular field staff to live at the College or even to visit the College more than once or twice during the winter, for they do not return to Winnipeg until the week end, and then it is outside College hours.

3. **To Save Expense.**—Each lecturer, by reason of the character of his work, requires to take with him from two to three hundred dollars worth of equipment for illustration purposes. This equipment probably weighs as many pounds. To dray it back and forth would be an economic waste, and it would mean also that quite often it would not be at the station in time for the lecturer when leaving, and he would have to go without it, much to his own dissatisfaction and that of his audience.

4. **For Convenience in Administration.**—Two-thirds of Extension work is of an administrative nature; and, as such, the responsibility for its direction falls directly upon the Minister of Agriculture, no matter where the office is situated. Under the head of administrative work is grouped the direction of Agricultural Societies, Women's Institutes, Poultry Associations, Horticultural Associations, Boys' and Girls' Clubs and Agricultural Representatives.

6. **Boys' and Girls' Clubs.**—Boys' and Girls' Club work is carried on under the joint direction of the Departments of Agriculture and Education, and can be more efficiently handled if the Extension office is located in the same building as the offices of the Department of Agriculture and Education.

Agricultural Council.

The work of the Extension Service in Manitoba is under the general direction of an Agricultural Council, made up as follows: Miss Kelso, Director of Home Economics at the Manitoba Agricultural College; Mrs. J. M. Watt, President Women's Institutes; R. Fletcher, Deputy Minister of Education; R. B. Vaughan, Director of Technical Education; J. H. Evans, Deputy Minister of Agriculture; S. T. Newton, Superintendent of the Extension Service; and John Bracken, President of the M. A. C., who is chairman of the Council. This Council meets once a month when progress reports are made and the work of the succeeding months discussed and recommendations made.

Many requests for speakers come direct to the College. These are at once referred to the Extension Service: First, because the Extension Service is in a better position to do the advertising; second, to prevent conflicting dates being made; third, to permit College speakers filling other engagements on the same trip which may happen to be on the waiting list.

On the other hand, the members of the Extension staff are continually running across problems in the country which are difficult to solve, and these are referred to the department at the College best able to deal with the problem.

Changes in the Staff

During the year C. A. Weir, Agricultural Representative at Brandon, resigned and became instructor in Live Stock and farm manager in Alberta. W. E. Watson, Representative at Virden, became Provincial Representative for the Sheep and Swine Branch of the Dominion Department of Agriculture. Chas. Murray, Representative at Dauphin, joined the Rural Credits Branch as a district supervisor. Miss Margaret Speechly, who had charge of the girls' club work, has gone into journalism, and her place has been taken by Miss Edith Gray, a recent graduate of the University of Manitoba. R. B. Vaughan, who was Assistant Director, was appointed Director of Technical Education for the Province, and J. R. Bell, who had charge of Agricultural Representative work, decided to confine all his attention to the Portage la Prairie district and the management of the Portage Industrial Fair.

The only additions to the permanent staff are Miss Beech, demonstration lecturer in dressmaking, and N. C. MacKay, who for the last nine years has been Agricultural Representative for Bruce County, Ontario. He takes charge of Agricultural Representative work on January 1, 1921, and will also act as Assistant Superintendent of the Extension Service.

Brief Outline of Extension Service Seasonable Activities

JANUARY

Soil Products Exhibition; Agricultural Societies Convention; Canadian Seed Growers' Convention; Beekeepers' Convention; 12 Gas Engine Short Courses; 80 Institute Meetings; General Organization of Boys' and Girls' Clubs; 12 Millinery Short Courses; 12 Dressmaking Short Courses.

FEBRUARY

Women's Institute Convention; 12 Gas Engine Short Courses; 80 Institute Meetings; 12 Dressmaking Short Courses; 6 Millinery Short Courses.

MARCH

8 Gas Engine Short Courses; 90 Institute Meetings; 12 Dressmaking Short Courses; 8 Millinery Short Courses.

APRIL

General Organization Work Boys' and Girls' Clubs; Organization Demonstration Teams; 12 Dressmaking short Courses; 8 Millinery Short Courses; Distribution of Instruction on Potato Growing; 8 Car Loads of 5,000 bushels of certified Irish Cobbler Seed brought in and will be distributed this month.

MAY

12 Dressmaking Short Courses; 8 Millinery Short Courses; Demonstration Team Work; Organizing Poultry, Grain and Live Stock Clubs; 15 Women's Institute District Conventions; Grasshopper work.

JUNE

25 Plowing Matches; Grasshopper Control; 12 Dressmaking Short Courses; Millinery Short Courses; Demonstration Team Work; Training Judging Teams; Taking Motion Pictures.

JULY

40 Summer Fairs, from 3 to 10 judges supplied for each; 12 Short Courses Sewing for girls; 8 Millinery Short Courses for girls; Brandon Exhibition; Taking Motion Pictures; Demonstration Team Competitions.

AUGUST

15 Agricultural Fairs (judges supplied); Demonstration Team Competitions; 4 Short Courses Dressmaking; 3 Millinery Short Courses; Judging Standing Field Crops; Inspecting C.S.G.A. Seed Plots; Sending out Supplies for Boys' and Girls' Clubs' Fairs,—1,000,000 Prize Cards, 2,000 Judges' Books, 6,000 Entry Forms, 120,000 Entry Tags.

SEPTEMBER

Trip to Winnipeg of Provincial Champions; 120 Boys' and Girls' Club Fairs; Judging Summerfallows; 12 Short Courses Dressmaking; 8 Courses Millinery.

OCTOBER

150 Boys and Girls' Club Fairs; Judging Summerfallows; Preparing material for Winter Extension Work.

NOVEMBER

15 Seed Fairs; 15 Dressed Poultry Shows (judges supplied for each); 12 Dressmaking Short Courses; 8 Millinery Short Courses; 50 Institute Meetings.

DECEMBER

25 Seed Fairs; 25 Poultry Shows; 6 Dressmaking Short Courses; Millinery Short Courses; Books in Travelling Libraries; 4 Gas Engine Short Courses; Annual Reports Compiled.

Agricultural Chautaquas.

During the months of January, February and March a new line of Extension work, known, for want of a better name, as Agricultural Chautaquas, was tried out. The plan was to hold afternoon and evening meetings for two days in succession, the speakers changing each day.

In this work the Extension Service co-operated with the Extension Division of the University of Manitoba, the Manitoba Agricultural College and the Social Service Council, to the very great satisfaction, we believe, of all parties concerned.

The afternoon lectures were devoted to agricultural subjects, and in the evening, motion pictures dealing with agriculture, education, travel and humor were used while the audience was assembling, after which one, and frequently two, popular lectures were given. The following members of the University staff delivered lectures: Dr. Kingston, Dr. Shipley, Prof. Buller, Prof. Jolliffe, Prof. O'Donaghue, Prof. Clarke, Prof. Burwash. From the Agricultural College, Prof. Jackson, and Pres. Reynolds each delivered four lectures. The following members of the Extension staff took part in the Chautaqua meetings; J. H. Kitely, 48; J. E. Bergey, 41; F. F. Parkinson, 36; J. D. Mayer, 42; R. Muckle, 38; A. C. Heise, 27.

The attendance at each place was as follows:

	1st Day	2nd Day
Crandall	90	120
Belmont	100	105
Minto	140	210
Alexander	120	125
Oakville	40	880
Rathwell	140	150
Plum Coulee	90	100
Isabella	190	175
Kenton	90	125
Lenore	200	135
Brookdale	120	200
Newdale	40	
Shoal Lake	85	135
Ninette	125	200
Bowsman	32	
Teulon	175	225
Whitemouth	40	30
Killarney	75	250
Manitou	140	60
Gretna	220	
Erickson	110	
Oak River	205	175
Baldur	150	160
Oak Lake	50	115
Kemnay	80	120
Virden	75	140
Napinka	180	190
Mather	110	120
McConnell	120	50
Cardale	140	70
Gilbert Plains	225	350
Wellwood	155	175
Eden	135	
Birtle	76	140
Benito	35	
Woodlands	135	75
Stonewall	100	75
Selkirk	50	120
Boissevain	350	160
Sanford	135	80
Lyleton	70	
Bethany	65	
Franklin	60	
Hartney	29	75
Griswold	90	100
Carberry	75	150
Holland	80	125
Deloraine	175	195
Decker	120	
Harding	92	110
Rivers	145	85
Neepawa	85	50
Edrans	85	140
Minnedosa	140	175
Elgin	400	425
Swan River	107	
Warren	126	85
Beausejour	225	230
W. Kildonan	75	70
Cartwright	32	
Darlingford	85	
Goodlands	52	

The Winter Series of Institute Meetings.

The institute meetings were held for the most part in rural schools, many of them many miles back from the railroad, and they were, for that reason, much more expensive than the chautaqua meetings, since livery expenses amounted to a considerable sum.

These meetings were held in the newer and more sparsely settled districts of the Province, and when the attendance of these meetings are compared with those in the older districts, the showing is very gratifying.

D. E. McKenzie, of the Dairy Branch, and Howard Cross, Extension lecturer on poultry, were present at all these meetings and spoke on their respective subjects.

The places and attendances were as follows:—

McMunn	80
Fisher Branch	55
Union Pr.	55
Hollywood	27
Agardsley	86
Scandinavia	50
Fraserwood	66
Rembrandt	125
Gardenton	205
Vita	315
Lonesand S.	75
Hnausa	
Makinak	125
Ralph Connor	82
New Scot	103
Okno Hall	65
Sambo School	41
West Mount	42
Round Lake	30
Spruce View	70
Tolstoi	234
Arbakka	211
Gimli	149
McCreary	105
Laurier	107
Silver Bay	64
Moosehorn	65
Sylvan	40
Geyser	40
Birchville	80
Amaranth	129
Lakeland	30
Langruth	66
Kinosota	125
Ochre River	
Ashern	61
Kiesman	109
Tarno	40
Virdir	103
E. Selkirk	57
Fisherton	55
S. Lake	24
Hollywood	75
Erickson	55
Fish Lake	72
Arborg	160
Wheat Hill	74
Stuartburn	147
S. Junction	65
Riverton	154
St. Rose	80

St. Andrews	63	Buffalo	50	Pioneer	73
Midwinter	45	Malonton	75	Newhome	78
Inwood	17	Geyser	46	Rosenburd	82
Big Point	40	Rosa	96	Framnes	32
Airedale	20	Piney	75	Matlock	74
Bluff Creek	48	Winnipeg Beach	105		

Motion pictures on agriculture, education, travel, and humor were used at these meetings as well, and it is estimated that fully 60 per cent. of those present had never seen motion pictures before.

Extension Schools.

Extension Schools on the Gas Engine were held at 40 towns and villages. The old plan of taking a car load of gas engines and other instruction material was abandoned at the beginning of the present season and an effort made to get tractors and other engines from the local agents at each place. This meant that more of the students were working on the kind of engine most used in the district.

For efficient short course work it has been found that 20 students is about as many as one instructor can look after and as the advance enrolment at each place was usually over 40, it was found necessary to divide the courses into three circuits and arrange for three instructors for each district.

On account of the demand for this kind of extension work, it was only possible to have the courses extend over a period of one week, and the time was divided into ten lecture periods of one hour and ten practical periods of two hours each.

The local community made provisions for a garage and lecture hall; also it took care of all other local expenses such as drayage, gasoline, and cylinder oil, caretaking, etc. Usually a fee of two dollars for each student was sufficient to cover all local expenses.

The Department of Agriculture paid the salary, travelling and living expenses of the lecturers.

The men in charge of these were: J. S. Cowan, M. Smythe and Elden Clarke. They, as well as their assistants, were thoroughly familiar with all phases of the gas engines subject; and it was due to this fact that the average percentage of attendance at each course ran close to 100 for the whole week. No hard and fast regulations were enforced in regard to attendance, and it was not unusual to find several visitors present when the lectures were being given. However, visitors were not included in the enrolment.

The places where gas engine schools were held and the number of students enrolled were as follows:

Strathclair	48	Morden	41	St. Pierre	45
Portage la Prairie	40	Virden	52	Brandon	45
Kenville	25	Erickson	32	Lyleton	21
Newdale	42	Medora	22	St. Anne	38
Lorette	20	St. Malo	55	Letellier	80
Winkler	48	Selkirk	22	Durban	25
Napinka	28	Waskada	24	St. Jean	36
Deloraine	25	Minnedosa	50	Treherne	45

Dauphin	15	Starbuck	35	McAuley	61
Miami	32	Grandview	30	Neepawa	34
Hamiota	59	Wawanesa	33	Ile Des Ch.	27
Minitonas	15	Pierson	31	Sanford	31
Oak Bank	40	Rivers	32	Carberry	75
Manitou	35				

Total Enrolment 1,485.

Seed Fairs.

The judges report that the interest taken in the seed grain fairs this year was better than for several years. The number of exhibits was larger and the quality better than usual. The places where seed fairs were held and the number of exhibits are as follows:—

Hamiota	32	Oak River	14	Isabella	26
Hartney	36	Elgin	15	Belmont	22
Swan Lake	20	Roblin	14	Gilbert Plains	24
Dauphin	37	Glenella	16	Sanford	26
Carman	99	Headingly	18	Miami	18
Rossburn	14	Russell	26	Binscarth	31
Birtle	41	Shoal Lake	28	Strathclair	11
MacGregor	16	Deloraine	16	Boissevain	26
Cartwright	13	Kelwood	13	Manitou	41
Melita	22	Langruth	16	Morris	41
Warren	51	Dugald	27	Reston	26
Souris	25	Portage la Prairie	72	Glenella	23
Woodlands	30	St. Rose	9	Plumas	10
Gladstone	10	Glenella	12	Pilot Mound	10
Stonewall	23				

Poultry Shows.

The poultry shows were also a little better than usual. At one or two points very successful sales of dressed poultry were held and it has been suggested that next year the Province be divided into ten or twelve districts and an auction sale and show held at a central point in each district. The places and number of exhibits were as follows:

Hamiota	16	Elgin	99	Isabella	4
Hartney	43	Roblin	44	Belmont	12
Swan Lake	8	Sanford	10	Gilbert Plains	15
Dauphin	6	Rossburn	18	Carman	10
Miami	4	Headingly	53	Binscarth	27
Birtle	11	MacGregor	13	Shoal Lake	15
Strathclair	10	Cartwright	24	Deloraine	25
Boissevain	19	Kelwood	15	Pilot Mound	13
Manitou	15	Souris	120	Melita	28
Reston	15	St. Rose	13	Glenella	18
Langruth	26	Dugald	19	Stonewall	41
Warren	21	Gladstone	18	Woodlands	46
Plumas	18	Gladstone		Portage la Prairie	17
Glenboro	19	(domestic exhibits)	68	Oak River	9

One judge was provided for each seed fair and one for each poultry show.

Institute lectures were given either immediately after the judging was finished or in the evening.

Boys' and Girls' Clubs.

Members and leaders of Manitoba's Boys' and Girls' Club organizations may well fell proud of the splendid success of the club work during the past season. 1920 has been a banner year for over 200 clubs. Each succeeding year finds the clubs becoming more firmly established as community enterprises. Marked progress has been made in perfecting the local organizations and bringing about uniformity of effort. Team demonstration work was introduced as a new feature, and is destined to play a leading part henceforth. 220 very successful fairs were held during the fall. The success thus attained has in a very large degree been due to the untiring efforts of voluntary leadership. School inspectors, teachers, bank managers, ministers, farmers, business and professional men and the women of every community have spent much time and thought in making club work a success. Special mention must also be made of the support and encouragement given by local and business organizations, chief among them being Women's Institutes, Agricultural Societies, Community Clubs, U. F. M., U. F. W., The T. Eaton Company, DeLaval Co., Banks, and the Canadian Bankers' Association.

Reorganization.—Between January and April 1st the reorganization of the 240 central clubs with approximately 1,600 branches was completed. Over 900 of the branch clubs filled out the membership enrolment forms sent out to them and received a standard club charter. All central clubs required to prepare and submit to the Extension Service for approval their proposed prize list. In the majority of cases these followed very closely the suggested list. Nearly every club had its prize list printed and copies were supplied to each member, one copy being placed on file with the Extension Office.

Bulletins.—Monthly club bulletins were prepared and distributed to all teachers, club leaders, bankers and others interested in club work. The articles included in these bulletins aimed to be seasonable and of an instructive nature and the Department is indebted to Messrs. Wm. Iverach, R. M. McCaul, R. W. Murchie, Norman James, Inspector J. W. Gordon, the agricultural representatives, members of the Extension staff, and others for the material supplied and their many helpful suggestions. Record cards for live stock, poultry, gardening and home economics work were prepared, and 54,000 of these distributed to club members.

Cow Testing.—While tried out more as an experiment during 1920, cow testing in future will undoubtedly become one of the important lines of work with many clubs. The Dominion Government Dairy Branch, through their field representative, gave valuable assistance in helping organize the 15 centres where the work was introduced. The Dominion Department of Agriculture further aided the work by supplying bulletins, circulars and record charts, together with paying eleven cents for every test. While this money is allowed the tester for his services, in many cases the tester voted the money toward defraying expenses incurred in purchasing equip-

ment for members. Several clubs were successful in training demonstration teams in cow testing. These teams gave several demonstrations before local gatherings, and it has proven a very practical method of showing others the value of the scales and the Babcock tester with a herd of dairy cows. Of special interest was the offer made by the De Laval Company to the three champion teams in their respective districts of a trip to Winnipeg during the week of the Dairy Show.

Garden Inspection.—Particularly good work was carried on by the seven clubs in Inspector Gordon's division in connection with gardening. Early in the spring a pamphlet with suggestions and the rules pertaining to the member's home garden was prepared by a committee assisted by Inspector Gordon and E. R. Hall, the agricultural representative. During the summer the gardens were inspected and scored, and prizes awarded to the winners. In a number of cases gardens scored almost perfect, and over the whole district the gardens were of a very high order. This systematic work was reflected in the splendid vegetable exhibits at the fairs. A number of clubs plan not only to introduce inspection of gardens, but of live stock, poultry and other projects.

Financial Assistance.—Little difficulty has been experienced by the officers in financing the Boys' and Girls' Club. Councils and school boards have given liberal grants toward the work. In addition, many clubs have supplemented their funds from proceeds of entertainments and picnics, together with donations from individuals and local organizations.

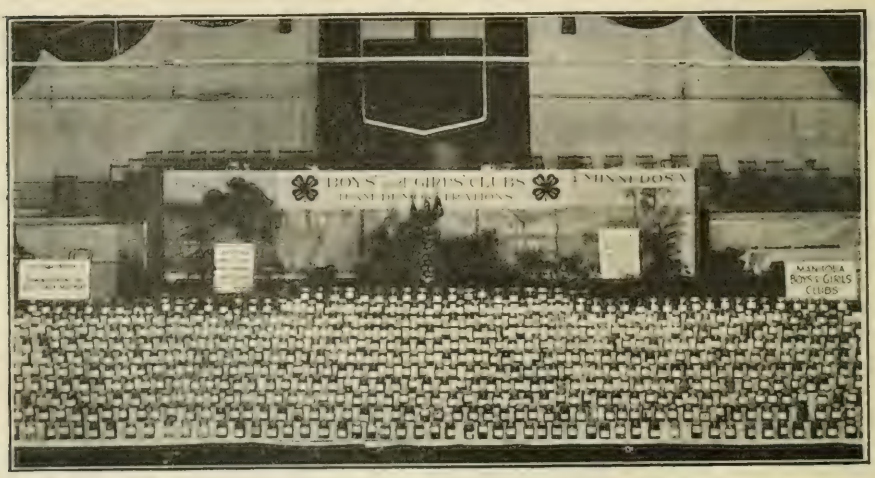
The Government allows a grant of 50% of the money paid out on all agricultural and home economics projects and 50% on school work up to 15% of the total grant. Besides the grant toward prizes, record cards and fair supplies were sent out free of cost. All expenses and fares in connection with judges were also met by the Department.

Visiting the Clubs.—During the past year an effort was made on the part of those in charge of club work to visit as many central and branch clubs as possible in order to become acquainted with those behind the movement and to explain to the members the details of club work. Motion pictures helped to make the meetings more interesting. Meetings were held at the schools, in churches and in halls. 108 points were visited and 173 meetings addressed, at 71 of which pictures were shown. Other members of the Extension Service visited, apart from team demonstration work, over 50 clubs.

Club Fairs—While the real success of a Boys' and Girls' Club cannot be measured by the showing made at the fair alone, the public is, however, inclined to pass judgment mainly upon the display in evidence at this annual event. A marked improvement was noticed in the management of most fairs. With few exceptions, exhibits were correctly entered, neatly arranged and in place by 10.30 a.m. Although live stock showed a falling off, the combined showing at the 220 fairs was very gratifying. It is estimated that 61,400 people, of which over 26,000 were adults, were in attendance.

The combined entries totalled as follows: Calves 1,056; pigs, 924; sheep, 436; colts, 335; gardening, 15,000; cooking, 12,000; sewing, 12,000; canning, 5,300; poultry, 5,000; grain, 2,500; dairy, 2,100; records, 2,025; noxious weeds, 1,645; farm mechanics, 1,419; stock judging, 112; school work, 46,384. The quality of exhibits was very favorably commented upon by both judges and visitors.

1920 Team Demonstration Work.—Early in January, 1920, plans were completed whereby Manitoba Boys' and Girls' Club members were to have the opportunity of carrying on team demonstration work. The T. Eaton Co. consented to provide a trip to Winnipeg for one team of three members from each two inspectoral divisions, or 45 members in all. A special bulletin was prepared outlining the details of demonstrating. Four senior students from the Agricultural College, under the supervision of Miss M. Speechly, were engaged for the summer months to train teams, and then commenced visiting the clubs May 1st. 280 teams were organized, and of those about 150 were entered for the eliminating competition which was to decide the teams entitled to the trip. 22 teams qualified for the trip, which had been arranged for between September 3rd and September 10th (inclusive), the week of the Winnipeg Garden Show. 66 girls from all parts of the country, with headquarters at the Agricultural College, spent a most enjoyable ten days visiting and demonstrating. The different teams gave demonstrations at Eaton's, the Normal School, and the Winnipeg Garden Show. Mornings and afternoons and evenings were taken up in sightseeing and educational tours. They attended theatres, went on a boat trip, and had banquets given them. Not a minute was wasted, and as much as possible was crowded into the all too short week. One thousand feet of motion picture films was taken of the 22 teams, both at work and at play. This will be shown throughout the Province to help others who wish to train teams.



Six Hundred Jars of Fruit and Vegetables Canned by Boys' and Girls' Demonstration Teams, Shown at the 1920 Winnipeg Garden Show.

The Medora Dyeing Team—Provincial Champions of 1920.

The work the girls presented was of a high standard and showed that they had concentrated on their subject and thoroughly mastered it. The splendid canning exhibits of over 700 jars of fruit and vegetables at the Winnipeg Garden Show gave evidence that the skill and ease of procedure in their demonstrations had been acquired by long and hard practice, and by familiarity with the process. They not only gained the experience of speaking and doing something before a large number of people, but they were able to give their audience some practical information.

Following is a list of the demonstration teams in order of merit:

1 Medora.
2 Morden.
3 Minnedosa.
4 Miami.
5 Hamiota.
6 Elva.
7 Crystal City.
8 Elkhorn.
9 Dugald.
10 Oak Lake.
11 Treesbank (A)
12 Treesbank (B)
13 Dauphin.
14 Baldur.
15 Reston.
16 Shell River.
17 Neepawa.
18 Minto.
19 Melita.
20 Miniota.
21 Roblin.
22 Gladstone.

Members of the Medora, Morden and Minnedosa teams won gold medals. Members of the Miami team won silver medals. Members of the Hamiota and Elva teams won the bronze medals.

Prizes were offered for the best essays on the trip to Winnipeg, by Mr. Wilson, of the T. Eaton Co. These were won by Miss Jean Rorke, of Minnedosa, Miss Molly Thring, Hamiota, and Miss Myrtle Conway, of Miniota.

While demonstration work was confined during 1920 to dyeing and canning, the 1921 programs will include sewing, baking, decorating, millinery, the meat chopper, cream separator, potato culture and kindred subjects. Extension workers will visit as many clubs as possible that may require assistance, but many points will be able to carry on and train teams without further help after their experience of last year. 1921 should be a banner year for team demonstration work, judging from the start made in 1920 and the enthusiasm with which it has been received not only by Boys' and Girls' Clubs, but by the teachers and parents and other organizations which did so much to train teams and promote the work.

Agricultural Representatives.

Live Stock Clubs.—Live Stock Clubs have been organized in several districts. In the Sheep Clubs, good grade or pure-bred sheep have been introduced, and these have been bred to good pure-bred rams and careful supervision of the work of the members is being given by the Agricultural Representative. A number of Calf Clubs have also been organized, and good grade or pure-bred calves have been distributed to the members who have been encouraged to feed and care for them in the best possible way.

Cow Testing.—Four Cow Testing Clubs were organized during the year and the members are weighing the milk from their cows and testing it for butter fat each month.

Poultry Work.—By co-operating with the Poultry Specialist of the Extension Service, culling demonstrations were conducted at 17 places. Here the farmer and his neighbors were instructed how to cull out the non-layers from the layers.

Live Stock Improvement.—An Agricultural Representative, to be a success, must work along live stock lines. This has taken the form of judging instruction to the boys and young men in their various centres, assisting the farmer in selecting pure-bred males and advising him in his feeding problems. One of the offices reports having given assistance in purchasing 20 head of pure-bred stock, and this has no doubt been duplicated in some, if not all the other districts. Pure-bred live stock clubs have been encouraged and already four of these are in existence, due to the activities of the Representatives.

Field Crop Improvement.—Manitoba, being largely a field crop province, naturally much of the Representative's time was devoted to field crop work. This included introducing new varieties of crops; experimenting with new crops, such as hemp, sugar beets, etc.; attempting to standardize the crop and reduce the number of varieties grown in one district, as in the case of potatoes; organizing farmers into clubs for the purpose of experimenting with crops, such as sweet clover, etc.

Potato work has been emphasized by all, and in one district 427 lots of seed of a standard variety were distributed, while an-

other district distributed 50 bushels of disease-free Irish Cobblers. The Representatives acted as a clearing agent for the farmers in disposing of seed and assisting others to secure the same. One office alone disposed of almost 8,000 bushels of grain, by putting the purchaser in touch with the seller.

Exhibits—The representatives have assisted various organizations in making collective exhibits at the various large fairs. Where these have been made, almost invariably the ones arranged by the Representative have been prize winners.

Boys' and Girls' Clubs.—Club work, as well as all work in connection with rural schools, has occupied a large amount of the Representative's time. Potato clubs, gardening clubs, live stock clubs, poultry clubs, etc., have been assisted, and close co-operation has been maintained at all times with club managers, school inspectors, etc.

Agricultural Societies.—The Representatives have always co-operated with various agricultural societies, two of them have acted as secretaries, and have practically remade the fairs in their districts. All of them have judged at a number of fairs outside their own district, and have been very active members on the board of directors and have assisted greatly in holding standing field crop competitions, summerfallow competitions, stock judging competitions at fairs, etc.

Rural Societies.—One of the Representatives acted as secretary to a Rural Credit Society, and all of them have assisted the board where there were branches in their districts.

Co-Operative Buying.—While the Representatives did not directly carry on any marketing operations, they assisted the farmers to organize for co-operative buying and selling and in one district on one single car of produce that was brought in by the farmers, co-operative buying saved them on that shipment, $1,320.00.

Labor Bureau.—Labor Bureaus have been conducted in a number of centres, and one Representative was instrumental in placing 40 men with farmers without any cost to them.

Outlook for 1921.—The outlook for 1921 is very encouraging. The people are behind the movement and we hope to have a continuance of their support as the work enlarges.

Close co-operation between the Representatives, the farmers and the Extension Service will, we hope, be continued during the year. New offices will be opened up as the demand comes for them and good men are available to fill them.

Finances.—The finances have been provided from two sources:

The Department of Agriculture provides: (a) $1,800 per year for salary; (b) Travelling expenses while the Agricultural Repre-

sentative is away from headquarters; (c) Mileage at the rate of 12½ cents per mile while using the car on official business.

The Municipality provides for: (a) Office and equipment; (b) Salary above $1,800; (c) Telephone, heat, light and sundry expenses.

Agricultural Representatives 1919-1920

Municipalities	Appointed	Resigned	Representative	Address
Portage la Prairie	April 1916		J. R. Bell,	Portage la Prairie.
St. Andrews, St. Clements and Brokenhead	May 1919		F. H. Newcombe,	Selkirk.
Stanley, Pembina and Louise	June 1919		E. R. Hall,	Morden.
Blanchard, Hamiota and Miniota	June 1919		E. G. Wood,	Hamiota.
Cameron, Brenda, Winchester	Jan. 1920		T. A. Johnson,	Deloraine.
Dauphin, Ochre River and St. Rose	April 1917	Aug. 1920	Chas. Murray,	Dauphin.
Wallace, Pipestone, Cornwallis and Daly	April 1919	Sept. 1920	W. E. Watson,	Virden.
Elton, Oakland and Glenwood	June 1920	July 1920	C. A. Weir,	Brandon.

Women's Institutes.

About one-fifth of the Extension program is carried on in co-operation with the Women's Institutes and other women's organizations.

By far the most important feature are the short courses in dressmaking and millinery, 125 dressmaking and 61 millinery courses having been held since last February. The majority of these courses were very successful; the average attendance was 16 for millinery and 12 for dressmaking, and when it is considered that 18 is an ideal class and several courses have to be held at inconvenient seasons of the year, for many Institutes the showing is particularly good.

While it would seem that the average cost of $50.00 for a course, or $3.00 for each one attending, is high, it is in reality very low from an economic standpoint as is shown by an analysis of one course. Take Pierson, for example:—

Number registered 28; Average attendance 16.5.

Number of Garments		Cost of Material	Value of Garments made
Dresses made	12	$102.75	$311.50
Coats made or altered	2	34.00	70.00
Boys' Coats made	1	1.00	15.00
Skirts made or altered	10	38.60	80.75
Waists made	8	24.00	67.00
Middy Blouses made	5	15.00	29.00
Totals	38	$215.35	$573.25

The demonstration lecturer's report shows that goods to the value of $215.35 were purchased and clothing to the value of $573.25 was made by those who were in attendance—a net increase in value of $358.10.

It may be argued that the women's time should be taken into consideration, but many women who have taken the courses assure us that the knowledge gained was well worth the time spent.

Or, viewed from another angle, the short courses are a co-operative plan whereby the women of a district meet together to do their sewing, and, in doing it, they have the advantage of having some one at hand to give them information on the numerous little details that mean so much in the making of a garment.

A conservative estimate of the value of the cloth used at short courses is $13,040 and the value of the garments made $32,600. The total cost of the dressmaking instruction was $6,000, or an economic gain for the Province of $13,560.

Scarcely as good a showing was made in millinery, for the reason, I presume, that hat styles change so rapidly that a woman does not feel safe in having her spring hat made too far ahead. The result is that it is very difficult to arrange for classes for the months of December, January, June and July, and the millinery instructors have to be employed on other work for this period.

However, a slightly larger class can be handled in millinery, and four dollars worth of work on five dollars worth of material makes a much better showing, as will be seen by carefully analyzing a representative week's work at MacGregor:

Enrollment—35.

Number of Hats Made		Cost of Material	Market Value
Hats made	40	$150.00	$425.00
Hats made over	10	12.50	70.25
Infants' Bonnets	3	2.00	7.00

The 61 millinery short courses cost the Government approximately $3,000.00. 1,539 hats were made. The material used cost the women concerned, $5,395.00, and the value of the hats made was $15,100.00, or an economic gain of approximately $6,700.00.

Altogether 125 dressmaking and 61 millinery courses were held, with a total enrollment of 3,250, each person attending, on an average, six sessions, making an aggregate attendance of 19,500.

MILLINERY SHORT COURSES

Miss Agnes Campbell

Date	Place	Organization	No. Registered	No Hats Made	Cost of Material	Market Value of Hats
Feb. 28	Roblin	W. I.	25	27	$ 112.05	$ 300.00
Mar. 6	Austin	W. I.	26	22	96.50	225.00
" 13	Plum Coulee	W. I.	24	21	97.30	235.00
" 20	Transcona	W. I.	32	33	122.20	400.00
" 27	Moore Park	W. I.	12	12	59.45	150.00
Apr. 3	Brandon	W. I.	45	63	189.80	325.00
" 10	Balmoral	W. I.	42	20	95.60	250.00
" 17	Mayfeld	W. I.	8	12	44.00	100.00
" 24	Selkirk	W. I.	25	12	58.20	150.00
May 1	Rivers	W. I.	36	28	106.00	125.00
" 8	McDonald	W. I.	20	20	75.65	175.00
" 15	Arizona	W. I.	19	20	81.50	200.00
" 22	McAuley	W. I.	23	15	47.20	120.00
" 29	Melita	W. I.	15	16	38.80	100.00
June 5	Pierson	W. I.	19	12	41.25	115.00
" 12	Rosser	W. I.	22	14	58.25	140.00
July 19	Woodnorth	U. F. W.	31	20	48.45	135.00
Aug. 7	Rosser	W. I.	16	14	54.35	145.00
" 14	Holland	U. F. W.	32	33	116.05	325.00
" 21	Stockton	W. I.	31	15	52.65	150.00
" 28	Plum Coulee	W. I.	21	20	91.05	225.00
Sept. 10	MacGregor	W. I.	30	30	96.20	275.50
" 17	Grandview	W. I.	42	31	139.50	300.00
" 24	Roblin	W. I.	20	26	74.90	200.00
Oct. 2	Emerson	W. I.	34	41	99.85	225.00
" 9	Dominion City	W. I.	26	30	98.00	220.00
" 16	McAuley	W. I.	17	16	31.40	100.00
" 23	Arizona	W. I.	23	15	79.20	175.00
" 30	Sprague	W. I.	19	17	58.20	140.00
Nov. 6	Rossburn	W. I.	44	30	98.80	225.00
" 13	Neepawa	W. I.	21	23	63.50	135.50
" 20	Waskada	W. I.	27	21	50.70	140.20
" 27	Goodlands	U. F. W.	28	7	22.90	65.30
Jan. 15	Dauphin	W. I.	26	21	66.70	175.25

Miss E. Blackburn

Mar. 1	Portage la P.	W. I.	40	43	140.00	300.00
" 8	Winnipeg	W. I.	29	32	125.00	375.00
" 15	Stony Mtn.	W. I.	29	31	100.00	325.00
" 22	Dugald	W. I.	24	30	125.00	365.00
" 29	Sprague	W. I.	25	30	140.00	425.00
Apr. 5	Gonor	School	21	16	45.00	175.00
" 12	Douglas	U. F. W.	30	35	100.20	350.00
" 19	Birtle	W. I.	29	35	54.75	200.00
" 26	Sifton	W. I.	35	44	155.00	225.00
May 3	MacGregor	W. I.	35	40	150.00	415.00
" 10	Gunton	U. F. W.	27	34	120.00	375.00
" 17	Holland	U. F. W.	54	50	150.00	425.00
" 24	Somerset	W. I.	20	24	75.35	235.00
" 31	Coulter	W. I.	15	9	36.80	120.00

Date	Place	Organization	No. Registered	No Hats Made	Cost of Material	Market Value of Hats
July 24	Lockport	School	11			
Sept. 6	Rivers	W. I.	25	29	90.00	300.00
" 13	Decker	W. I.	26	36	122.00	375.00
" 20	Stony Mtn.	W. I.	15	15	50.00	165.00
" 27	Cypress River	W. I.	35	35	140.00	410.00
Oct. 4	Balmoral	W. I.	21	21	77.00	235.00
" 11	Douglas	U. F. W.	24	25	84.65	200.00
" 18	Winnipeg	W. I.	22	24	106.45	289.00
" 25	Clearwater	W. I.	40	45	141.20	400.00
Nov. 1	Mather	U. F. W.	35	36	147.50	425.00
" 8	Darlingford	W. I.	21	21	66.00	150.50
" 15	Woodlands	U. F. W.	16	15	52.75	175.00
" 22	Killarney	W. I.	21	18	110.00	320.00
Jan. 31	Charleswood	W. I.	6	10	25.00	75.00
	Total		1,631	1,539	$5,395.80	$14,461.25

DRESSMAKING SHORT COURSES

Miss M. Smith

Date	Place	Organization	No. Registered
Feb. 21	Fork River	W. I.	18
Mar. 5	Treherne	W.I.	33
" 20	Boissevain	W. I.	24
" 27	Melita	W. I.	14
Apr. 1	Birtle	W. I.	15
" 9-16	Brandon	W.I.	54
" 30	Miniota	W. I.	16
May 7	Chater	U. F. W.	16
" 14	Graysville	W. I.	18
" 21	La Riviere	W. I.	18
" 27	Inwood	W. I.	19
June 11	Manitou	W. I.	25
" 18	Charleswood	W. I.	10
" 25	Cypress River	W. I.	15
July 2	Morris	W. I.	12
" 9	Domnion City	W.I.	14
" 16	McGregor	W. I.	16
July 23	St. Rose		
" 27	Sprague	W. I.	14
Sept. 23	Portage la P.	W.I.	26
" 9-16	Winnipeg	W.I.	26
" 24	Plum Coulee	W. I.	14
Oct. 1	Brandon	W. I.	36
" 13	Treherne	W. I.	20
" 29	Grandview	W. I.	21
Nov. 10	Durban	W. I.	20
" 21	Pierson	W. I.	22
Dec. 3	Reston	W. I.	21
" 10	Sifton	W. I.	20
" 17	Charleswood	W. I.	11
Jan. 14	Dauphin	W. I.	18
" 21	Fork River	W. I.	10
" 29	Winnipegosis	W. I.	14
Feb. 5	Sinclair	U. F. W.	12
" 12	Reston	W. I.	15

Miss B. M. Price

Date	Place	Organization	No. Registered
Feb. 28	Souris	W. I.	15
Mar. 6	Foxwarren	W. I.	19
" 20	Douglas	U. F. W.	17
" 27	Transcona	W. I.	15
Apr. 3	Plum Coulee	W. I.	16
" 10	Melton	W. I.	15
" 17	Sifton	W. I.	15
" 24	Roblin	W. I.	27
May 1	Winnipeg	W. I.	16
" 8	Coulter	W. I.	15
" 15	Elva	W. I.	20
July 24	McAuley	W. I.	20
July 31	Justice	U.F.W.	18
Aug. 7	Rounthwaite	W. I.	9
" 14	Gladstone	W. I.	21
" 28	Rossburn	W. I.	18
Sept. 4	Moore Park	W. I.	10
" 11	Souris	W. I.	17
" 18	Transcona	W. I.	16
Oct. 2	Elkhorn	W. I.	31
" 9	Woodnorth	U. F. W.	22
" 16	Emerson	W. I.	20
May 22	Rivers	W. I.	23
" 29	Otterbourne	U. F. W.	14

DRESSMAKING SHORT COURSES—Miss B. M. Price—(Cont.)

Date	Place	Organization	No. Registered
June 5	Mayfield	W.I.	10
" 12	Waskada	W. I.	17
" 19	Dugald	W. I.	28
" 26	Woodland	W. I.	24
July 17	Gunton	W. I.	15
Oct. 23	Birtle	W. I.	15
" 30	Foxwarren	W. I.	18
Nov. 6	Balmoral	W. I.	20
" 13	Killarney	W. I.	24
" 20	Elva	W. I.	20
" 27	Rivers	W. I.	19
Dec. 24	Carman	U. F. W.	18
" 11	Somerset	W. I.	15

Miss T. Thordarson

Date	Place	Organization	No. Registered
Apr. 17	Portage la P.	W.I.	22
May 8	Stockton	W. I.	29
" 15	Somerset	W. I.	16
" 22	Isabella	W. I.	21
" 29	Decker	W. I.	11
June 5	Ellenville	W. I.	15
" 19	Balmoral	W. I.	18
" 26	Minitonas	W. I.	16
July 10	Brookdale	U. F. W.	14
" 17	Rivers	W. I.	18
" 24	Pilot Mound	W. I.	19
July 31	Pilot Mound	W. I.	20
Aug. 7	Rosebank	U. F. W.	20
" 14	Crandall	W. I.	29
" 21	Ogilvie	U. F. W.	16
Sept. 2	Tummell	W. I.	24
" 11	Ethelbert	W. I.	30
" 18	Minitonas	W. I.	30
" 25	Isabella	W. I.	15
Oct. 2	Decker	W. I.	12
" 9	Miniota	W. I.	14

Miss W. Beech

Date	Place	Organization	No. Registered
Sept. 18	Otterburne	U. F. W.	18
" 25	Myrtle	W. I.	16
Oct. 2	Waskada	W. I.	13
" 9	Mather	U. F. W.	16
" 16	Clearwater	W. I.	12
" 23	Goodlands	Sch.	14
" 30	Crystal City	W.I.	12
Nov. 6	Darlingford	W. I.	14
Nov. 13	Douglas	U. F. W.	14
" 20	Austin	W. I.	15
" 27	McGregor	W. I.	11
Dec. 3	Livingstone	W. I.	14
" 10	Gladstone	W. I.	7
Jan. 4	Elgin	U. F. W.	16
" 11	Elgin	U. F. W.	16

TRAVELLING LIBRARIES

Place Sent	Secretary	Organization	Date
Deloraine	Mrs. C. Steedsman	Women's Inst.	Jan. 5th, 1920
Oak Bank	Miss L. Hagemeir	Community Club	" 5th, "
Melita	Mrs. W. Leslie	Women's Inst.	" 5th, "
Oak River	Mr. J. R. Highet	Agric. Society	" 5th, "
Coulter	Miss L. Atkinson	Women's Inst.	" 5th, "
Pilot Mound	Mr. W. S. Smith	Agric. Society	" 5th, "
Virden	Mr. D. McDonald	Agric. Society	" 22nd, "
Minnedosa	Mrs. J. Lewis	Women's Inst.	" 22nd, "
Plum Coluee	Mrs. S. A. Brown	Women's Inst.	" 22nd, "
Cartwright	Mr. B. A. Vesey	Agric. Society	" 22nd, "
MacGregor	Mrs. A. Bousfield	Women's Inst.	" 22nd, "
Boissevain	Mrs. C. C. Musgrove	Women's Inst.	" 22nd, "
Petrel	Miss M. Chisholm	Women's Inst.	" 28th, "
Edrans	Miss A. Skeet	Women's Inst.	" 28th, "
Strathclair	Mr. F. Williamson	Agric. Society	" 28th, "
Gypsumville	Mrs. L. Mackrell	Women's Inst.	" 28th, "
Glenella	Mr. Chas. Draper	Agric. Society	" 28th, "
Belmont	Mrs. R. Phillips	Women's Inst.	" 28th, "
Sprague	Mrs. N. Ostrom	Women's Inst.	" 28th, "
Gilbert Plains	Mrs. J. H. Clay	Women's Inst.	" 28th, "
Rivers	Mr. F. Bowman	Agric. Society	" 28th, "
Elkhorn	Mrs. E. G. Chapman	Women's Inst.	Mar. 19th, "
Emerson	Mrs. R. Masterton	Women's Inst.	" 19th, "

Place Sent	Secretary	Organization	Date
Manitou	Mrs. Jas. Strong	Women's Inst.	Mar. 19th, 1920
Augusville	Mr. L. L. Lewis	Union Bank	" 19th, "
Dauphin	Miss Jennie Strang	Rest Room Boar	" 19th, "
Benito	Miss S. Snellgrove	Women's Inst.	Apr. 12th, "
Shellmouth	Mr. C. R. Webb	Agric. Society	" 12th, "
Cypress River	Mrs. J. A. Morcombe	Women's Inst.	" 12th, "
Ogilvie	Mrs. H. R. Paynter	U. F. W.	" 12th, "
Graysville	Mrs. J. Dewar	Women's Inst.	" 12th, "
Fork River	Mr. D. F. Wilson	Agric. Society	" 12th, "
Hamiota	Mr. P. C. W. Raymer	Agric. Society	" 12th, "
McAuley	Mrs. Hugh Baird	Women's Inst.	" 12th, "
Darlingford	Miss L. Boyle	Women's Inst.	Nov. 16th, "
Thornhill	Miss E. B. Sweet	U. F. W.	" 16th, "
Bedford	Mrs. R. Sault (S.S.)		Dec. 28th, "
Pine View	Mrs. G. Havard (S.S.)	Ladies' Aid	Jan. 3rd, 1921
Moore Park	Mrs. H. J. Truss	Women's Inst.	Nov. 26th, 1920
Plum Coulee	Mrs. S. A. Brown	Women's Inst.	Dec. 21st, "
Cold Springs	Mrs. A. Enwright	Women's Inst.	" 21st, "
Gilbert Plains	Mrs. Paterson	Women's Inst.	" 21st, "
Dauphin	Miss J. Strang	Rest Room Boar	" 23rd, "
Woodnorth	Mrs. J. Matthewson	U. F. W.	" 3rd, "
Steep Rock	Mrs. D. McDonald	U. F. W.	" 3rd, "
Minitonas	Miss M. Johnstone	Women's Inst.	" 23rd, "
Emerson	Mrs. R. G. Masterton	Women's Inst.	" 24th, "
Oak River	Mr. J. R. Highet	Agric. Society	" 28th, "
Strathclair	Mr. D. Williamson	Agric. Society	" 24th, "
Giroux	Mr. W. A. Cohoe	U. F. M.	" 23rd, "
Kinosota	Mr. F. W. Trotter	Agric. Society	" 21st, "
Silverton	Mrs. J. F. Douglas	U. F. W.	" 23rd, "
Pierson	Mrs. E. Dandy	Women's Inst.	" 24th, "
Glenella	Mr. C. Draper	Agric. Society	" 23rd, "
MacGregor	Mrs. A. Bousfield	Women's Inst.	" 28th, "
Beulah	Mrs. M. G. Doyle	Women's Inst.	Jan. 3rd, 1921
Waskada	Mrs. M. Blaker	Women's Inst.	" 3rd, "
Ashern	Mrs. W. H. Hyde	Women's Inst.	" 3rd, "
Neepawa	Mrs. B. Palmiter	Women's Inst.	" 3rd, "
Langruth	Rev. Robt. Holloway	Union Church	" 3rd, "
Tummel	Mrs. H. C. Cranwell	Women's Inst.	" 3rd, "
Ingelow	Mr. H. E. Becker	Community Club	" 3rd, "
Souris	Miss Smith	U. F. W.	Dec. 28th, 1920
Morris	Mrs. S. Paterson	Women's Inst.	Jan. 3rd, 1921
Oak Bank	Miss G. Bray	Community Club	Dec. 28th, 1920
Elva	Miss M. E. Scott	Women's Inst.	Jan. 4th, 1921
Melita	Mrs. W. Leslie	Women's Inst.	Jun. 22nd, 1920
Foxwarren	Mrs. C. Leavens	Women's Inst.	Nov. 26th, "
Morris	Mrs. S. Paterson	Women's Inst.	Jun. 22nd, "
Kawende	Mrs. L. Moxham	U. F. W.	Nov. 16th, "
Dropmore	Mrs. W. Skinner	U. F. W.	Jun. 22nd, "
Makinak	Mr. B. C. Bradell	Town	Nov. 16th, "
Solsgirth	Mrs. W. Workman	Women's Inst.	Sep. 24th, "
Mayfeld	Miss E. McIntosh	Women's Inst.	" 24th, "
Elva	Mrs. E. A. Hutchings	Women's Inst.	" 16th, "
Morden	Mr. C. H. Baird	U. F. M.	Jan. 12th, 1921
Ellenville	Miss M. McConnell	Women's Inst.	Nov. 26th, 1920
Gimli	Mrs. H. R. Lawson	Women's Inst.	Nov. 17th, "
Minto	Miss A. L. McCuaig	U. F. W.	Sep. 24th, "
Reston	Mrs. D. G. Dobbie	Women's Inst.	" 24th, "
Sprague	Mrs. N. G. Ostrom	Women's Inst.	Dec. 20th, "
Arnaud	Mrs. W. Borland	Women's Inst.	Sep. 17th, "
Arizona	Mrs. J. Robinson	Women's Inst.	Nov. 17th, "
Austin	Mrs. W. S. Booth	Women's Inst.	Sep. 17th, "
Somerset	Miss I. Decosse	Women's Inst.	" 24th, "
Medora	Miss M. McGregor	Women's Inst.	" 17th "
Lidstone	Miss Ruby Finch	Women's Inst.	" 9th, "

Place Sent	Secretary	Organization	Date
Dugald	Miss M. Milne	Women's Inst.	" 17th "
Basswood	Mrs. S. Crerar	Women's Inst.	" 17th "
Vista	Mrs. T. Millar	U. F. W.	Dec. 20th, "
Arden	Mrs. A. Thomson	U. F. W.	Nov. 17th, "
Moline	Miss A. Hunter	Women's Inst.	" 16th, "
Clearwater	Miss A. K. Bell	Women's Inst.	Sep. 17th, "
Freedale	Mr. E. Fawthrop	U. F. M.	Jan. 24th, 1921
Swan Lake	Mrs. W. J. Moffatt	Women's Inst.	Sep. 24th, 1920
Petersfield	Mrs. I. L. Sargent	Women's Inst.	" 24th, "
Oakburn	Mrs. Jas. Connel	Women's Inst.	Feb. 25th, 1921
Ethelbert	Miss M. E. Fry	Women's Inst.	" 5th, "
Kaleida	Mrs. Ed. Brown	U. F. W.	" 21st, "

SOLDIER SETTLEMENT LIBRARIES

Dauphin	Mrs. G. H. Dixon		Feb. 11th, 1921
Ste. Rose	Mrs. K. Houghton-Brown		" 11th, "
Swan River	Mrs. Harold Clark		" 11th, "
Bowsman	Mrs. H. J. Smithers		" 28th, "
Bield	Mrs. J. F. Burgess		" 11th, "
Makinak (Million)	Mrs. J. Rollings		" 11th, "
Birch River	Mrs. R. Smith		" 11th, "
Makinak	Mrs. Bailey		" 11th, "
Tilston	Mrs. D. McLean		" 28th, "
Minitonas	Mrs. Greenwood		" 11th, "
Oatfield	Mrs. J. B. Beckwith		Mar. 18th, "
Ashern	Mrs. J. Jones		" 18th, "
Steep Rock	Mrs. F. J. Dishman		" 18th, "
Moosehorn	Mrs. G. C. Foster		" 18th, "
Grahamdale	Mrs. G. M. Stine		" 18th, "
Stonewall	Mrs. E. Marshall		" 18th, "
Snowflake	Mrs. A. C. Osborne		" 18th, "
Clarkleigh	Mrs. H. C. Reynolds		" 18th, "
Inwood	Mrs. Sales		" 18th, "
Badger	Mrs. W. J. Hill		" 18th, "
Moosehorn	Mrs. F. C. Sellar		" 19th, "
Mulvihill	Mrs. S. W. Chambers		" 19th, "
Camper	Mrs. L. Ferguson		" 29th, "
Balmoral	Mrs. W. E. Bloodworth		" 29th, "
Fraserwood	Mr. Thos. Law		" 29th, "

The books for the Soldier Settlement Libraries were donated by the Daughters of the Empire.

All of which is respectfully submitted,

S. T. NEWTON,
Director Extension Service.

STATEMENT OF EXPENDITURE

OF GRANT TO THE MANITOBA DEPARTMENT OF AGRICULTURE AND IMMIGRATION

Under The Dominion "Agricultural Instruction Act"

FOR THE PERIOD COMMENCING JANUARY 1st, 1920, AND ENDING DECEMBER, 31st, 1920

Instructors and Representatives—		
Salaries and wages..	$13,267.72	
Travelling expenses	5,029.32	
Printing and Advertising	1,314.30	
		$19,611.34
Dairy Work—		
Salaries and wages	5,181.50	
Travelling expenses	2,753.28	
		7,934.78
Poultry Work—		
Salaries and wages..	2,424.92	
Travelling expenses	1,400.40	
		3,825.32
Boys' and Girls' Clubs—		
Salaries and wages..	7,903.21	
Travelling expenses	7,357.06	
Maintenance	654.26	
Printing and advertising	1,758.24	
		$17,672.77
Short Courses—		
Salaries and wages..	7,285.98	
Travelling expenses	6,229.23	
Maintenance	992.35	
Printing and advertising	433.52	
Equipment	194.14	
		15,135.22
Home Economics—		
Salaries and wages..	8,618.09	
Travelling expenses	5,496.17	
Maintenance	5.64	
Printing and advertising	401.50	
Equipment	23.18	
		14,544.58
Soil Analysis and Survey—		
Travelling expenses	80.94	
		80.94
Bee-Keeping—		
Salaries and wages..	1,448.62	
Travelling expenses	935.08	
Printing and advertising	11.68	
		2,395.38
Killarney Demonstration Farm—		
Salaries and wages..	2,019.63	
Travelling expenses	98.50	
Maintenance	2,481.86	
Equipment	492.84	
		5,092.83
Contingency and Miscellaneous—		
Salaries and wages..	508.36	
Maintenance	254.05	
Printing and advertising "Manitoba Horticulturist"	923.36	
		1,685.77
Total		$87,978.93

Balance on hand December 31st, 1919	$32,308.43	
Grant from Dominion Government, 1919-20	77,113.11	
Refunds and sales, 1920	2,475.29	
		$111,896.83
Expenditure Jan. 1st. 1920, to Dec. 31st, 1920	87,978.93	
Balance on hand	23,917.90	
		$111,896.83

Certified correct:

A. D. JOLLIFFE.
Auditor of Revenue

Full details of expenditures are published by the Dominion Government in the official report of operations under "The Agricultural Instruction Act" of Canada.

Some of
Manitoba's
Homes

Comparative Tables of Agricultural Statistics

WHEAT

Year	Acreage (On basis of seeding)	Yield per acre	Total yield, bushels.	Ten year averages. Ten years ending	Ten year averages. average yield.
1883	260,842	21.80	5,686,355	.....	.....
1884	307,020	20.11	6,174,182	.....	.....
1885	357,013	20.80	7,429,440	.....	.....
1886	384,441	15.33	5,893,480	.....	.....
1887	432,134	25.7	12,351,724	.....	.....
1888*	.....				
1889	632,245	12.4	7,201,519	.....	.....
1890	746.058	19.65	14,665,769	.....	.....
1891	916,664	25.3	23,191,599	.....	.....
1892	875,990	16.5	14,453,835	.....	.....
1893	1,003,640	15.56	15,615,923	1893	19.0
1894	1,010,186	17.	17,172,883	1894	18.5
1895	1,140,276	27.86	31,775,038	1895	19.3
1896	999,598	14.33	14,371,806	1896	19.2
1897	1,290,882	14.14	18,261,950	1897	18.6
1898	1,488,232	17.01	25,313,745	1898	18.0
1899	1,629,995	17.13	27,992,230	1899	18.2
1900	1,457,396	8.9	13,025,252	1900	17.9
1901	2,011,835	25.1	50,502,085	1901	17.7
1902	2,039,940	26.	53,077,267	1902	19.0
1903	2,442,873	16.42	40,116,787	1903	18.8
1904	2,412,235	16.52	39,162,458	1904	18.5
1905	2,643,588	21.07	55,761,416	1905	18.3
1906	3,141,537	19.49	61,250,413	1906	18.7
1907	2,789,553	14.22	39,688,266	1907	18.4
1908	2,850,640	17.28	49,252,539	1908	18.3
1909	2,642,111	17.33	45,774,707	1909	18.3
1910	2,962,187	13.47	39,916,391	1910	18.2
1911	3,339,072	18.29	61,058,786	1911	17.7
1912	2,823,362	20.7	58,433,579	1912	17.4
1913	3,141,218	20.	62,755,455	1913	17.8
1914	3,366,200	15.5	52,491,879	1914	17.7
1915	3,664,281	26.4	96,662,912	1915	18.4
1916	2,994,529	10.16	30,439,600	1916	17.5
1917	2,994,529	10.16	30,439,600	1916	17.5
1917	2,853,362	14.9	42,689,061	1917	17.4
	(on basis of harvesting)				
1918	2,917,384	16.5	48,142,062	1918	17.3
1919	2,862,383	14.3	40,975,280	1919	17.1
1920	2,687,500	13.96	37,542,000	1920	17.1

OATS

Year	Acreage (on basis of seeding)	Yield per acre	Total yield. bushels.	Ten year averages. Ten years ending	Ten year averages. average yield
1883	215,431	44.	9,478,964	.....	.....
1884	133,044	30.55	4,064,494	.....	.....
1885	157,026	40.53	6,364,263	.....	.....
1886	161,030	25.15	4,049,904	.....	.....
1887	155,176	46.2	7,265,237	.....	.....
1888*	.....				

* No statistics prepared in 1888.

OATS—(Continued.)

Year	Acreage	Yield per acre	Total yield, bushels.	Ten year averages. Ten years ending	Ten year averages. average yield
1889	218,744	16.8	3,415,104	.....	.....
1890	235,534	40.2	9,513,443	.....	.....
1891	305,644	48.29	14,762,605	.....	.....
1892	332,974	35.	11,654,090	.....	.....
1893	388,529	25.28	9,823,935	1893	34.8
1894	413,686	28.8	11,907,854	1894	32.9
1895	482,658	48.73	22,555,733	1895	35.4
1896	442,445	28.25	12,502,318	1896	34.1
1897	468,141	22.7	10,629,513	1897	33.1
1898	514,824	33.6	17,308,252	1898	32.6
1899	575,136	38.30	22,318,378	1899	34.3
1900	429,108	20.5	8,814,312	1900	32.7
1901	689,951	40.3	27,796,588	1901	32.8
1902	725,060	47.5	34,478,160	1902	34.7
1903	855,431	38.62	33,035,774	1903	35.9
1904	943,574	38.8	36,289,979	1904	36.8
1905	1,031,239	42.6	45,484,024	1905	37.2
1906	1,155,961	43.85	50,692,977	1906	38.8
1907	1,213,596	34.8	42,140,744	1907	39.1
1908	1,216,632	36.8	44,686,043	1908	39.1
1909	1,373,683	37.1	50,983,056	1909	38.8
1910	1,486,436	28.7	42,647,766	1910	38.2
1911	1,628,562	45.3	73,786,683	1911	39.1
1912	1,939,982	46.	87,190,677	1912	39.4
1913	1,939,723	42.	81,410,174	1813	39.8
1914	2,064,114	30.	62,034,668	1914	38.6
1915	2,121,845	47.7	101,077,991	1915	39.4
1916	2,062,411	32.8	67,729,922	1916	38.5
	(on bass of harvesting)				
1917	2,230,005	28.4	63,372,832	1917	37.4
1918	1,694,072	32.1	54,473,483	1918	37.
1919	1,826,366	31.6	57,698,014	1919	36.5
1920	1,855,000	31.08	57,657,000	1920	36.7

* No statistics prepared in 1888.

BARLEY

Year	Acreage (on basis of seeding)	Yield per acre	Total yield, bushels.	Ten year averages. Ten years ending	Ten year averages. average yield.
1883	60,281	30.	1,898,430	.....	.....
1884	40,936	32.83	1,363,928	.....	.....
1885	51,189	29.	1,113,481	.....	.....
1886	69,565	18.70	1,300,865	.....	.....
1887	56,110	34.31	1,925,231	.....	.....
1888*					
1889	80,238	31.1	1,051,551	.....	.....
1890	66,035	31.33	2,069,415	.....	.....
1891	89,829	35.6	3,197,876	.....	.....
1892	97,644	29.	2,831,676	.....	.....
1893	114,762	22.11	2,547,653	1893	26.5
1894	119,528	25.87	2,981,716	1894	25.8
1895	153,839	36.69	5,645,036	1895	27.4
1896	127,885	24.8	3,171,747	1896	27.4
1897	153,266	20.77	3,183,602	1897	27.0
1898	158,058	27.06	4,277,927	1898	28.6
1899	182,912	29.40	5,379,156	1899	27.9
1900	155,111	18.9	2,939,477	1900	26.7
1901	191,009	34.2	6,536,155	1901	27.1

BARLEY—(Continued.)

Year	Acreage	Yield per acre	Total yield. bushels.	Ten year averages. Ten years ending	Ten year averages. average yield
1902	329,790	35.9	11,848,422	1902	28.7
1903	326,537	26.66	8,707,252	1903	28.8
1904	361,004	30.54	11,177,970	1904	29.3
1905	432,298	34.2	14,064,175	1905	29.4
1906	474,242	36.96	17,532,554	1906	30.9
1907	649,570	25.7	16,752,724	1907	30.4
1908	658,441	27.54	18,135,757	1908	30.0
1909	601,008	27.31	16,416,634	1909	29.7
1910	624,644	20.75	12,960,039	1910	28.8
1911	759,977	31.5	23,999,239	1911	29.9
1912	962,928	35.1	33,795,191	1912	29.6
1913	1,153,834	28.6	33,014,693	1913	29.6
1914	1,187,136	20.	23,866,098	1914	28.0
1915	1,039,849	34.0	35,423,495	1915	28.5
1916	1,153,660	20.9	24,116,141	1916	27.1
1917	1,270,724	20.4	26,014,948	1917	26.6
(On basis of harvesting)					
1918	1,093,129	25.5	27,963,390	1918	26.4
1919	855,048	20.1	17,149,425	1919	25.7
1920	831,000	21.08	17,520,000	1920	25.7

* No statistics prepared in 1888.

FLAX

Year	Acreage	Yield per acre	Total yield, bushels.	Ten year averages. Ten years ending	Ten year averages. average yield.
(On basis of seeding).					
1891	1,718	16.5	28,347	.....	.....
1892	1,718	20.	34,360	.....	.....
1893	9,737	11.96	116,454	.....	.....
1894	23,504	15.55	366,000	.....	.....
1895	82,668	15.5	1,281,354	.....	.....
1896	20,325	12.75	259,143	.....	.....
1897	20,653	12.	247,836	.....	.....
1898	25,000	14.	350,000	.....	.....
1899	21,780	14.	304,920	.....	.....
1900	20,437	8.04	164,313	.....	.....
1901	20,978	12.7	266,420	.....	.....
1902	41,200	13.7	564,440	.....	.....
1903	55,900	10.5	586,950	.....	.....
1904	35,428	13.1	464,106	.....	.....
1905	24,707	13.02	326,964	.....	.....
1906	18,790	14.6	276,330	.....	.....
1907	25,915	12.25	317,347	.....	.....
1908	50,187	11.8	502,206	.....	.....
1909	20,635	12.29	253,637	.....	.....
1910	41,002	9.97	410,929	.....	.....
1911	85,836	14.	1,205,727	.....	.....
1912	196,315	13.6	2,671,729	.....	.....
1913	115,054	11.3	1,301,278	.....	.....
1914	100,191	10.	1,001,910	.....	.....
1915	64,863	11.4	739,808	.....	.....
1916	55,608	10.5	587,635	1916	11.9
1917	63,605	8.6	552,309	1917	11.3
(On basis of harvesting)					
1918	106,635	10.2	1,090,994	1918	11.1
1919	55,679	9.3	520,303	1919	10.7
1920	143,965	8.04	1,157,800	1920	10.7

Manitoba Has Several Very Picturesque Little Lakes

RYE

Year	Acreage	Yield per acre	Total yield, bushels.	Seven Year Average. Seven years ending	Average yield.
	(Fall and Spring Rye Combined).				
1914	10,138	17.	172,326	.....	.....
1915	16,699	21.8	364,572	.....	.....
1916	32,559	19.4	633,371	.....	.....
	(Fall Rye only).				
1917	54,747	15.8	866,845	.....	.....
1918	114,139	16.2	1,855,294	.....	.....
1919	138,726	14.1	1,957,983	.....	.....
1920	60,521	16.47	996,900	1920	17.2
	(Spring Rye only).				
1917	25,866	16.6	429,472	.....	.....
1918	124,780	16.6	2,080,398	.....	.....
1919	158,463	13.5	2,132,407	.....	.....
1920	88,081	15.	1,321,700	1920	17.1

POTATOES

Year	Acreage	Yield per acre	Total yield, bushels.	Ten year average. Ten years ending	Average yield.
1899	19,151	168.5	3,226,395	.....	.....
1900	16,880	132.	2,226,880	.....	.....
1901	24,429	196.	4,797,433	.....	.....
1902	22,005	157.	3,459,325	.....	.....
1903	27,198	175.	4,757,000	.....	.....
1904	24,471	156.8	3,799,569	.....	.....
1905	25,835	187.	4,759,646	.....	.....
1906	25,043	187.7	4,702,595	.....	.....
1907	39,388	157.2	5,092,161	.....	.....
1908	28,963	171.8	5,148,696	.....	.....
1909	28,265	192.9	5,450,200	.....	.....
1910	40,745	121.9	4,966,233	.....	.....
1911	44,478	187.	8,317,241	.....	.....
1912	51,878	206.	10,734,612	.....	.....
1913	55,743	180.	9,977,263	.....	.....
1914	60,484	140.4	8,494,104	.....	.....
1915	67,343	114.8	7,736,308	.....	.....
1916	62,581	145.1	9,080,602	.....	.....
1917	66,084	110.3	7,293,655	.....	.....
	(On basis of harvesting)				
1918	45,000	165.	7,431,076	.....	.....
1919	38,410	130.	5,287,480	.....	.....
1920	36,200	94.	3,410,000	1920	147

BUTTER AND CHEESE

Year	Butter — Creamery and Dairy combined — Pounds	Butter — Creamery and Dairy combined — Value	Cheese — Pounds	Cheese — Value
1895	1,763,252	$ 217,066	1,553,192	$107,170
1896	2,245,025	.....	986,000	.....
1897	2,397,464	366,317	987,007	83,895
1898	2,116,644	340,087	800,084	69,367
1899	2,357,049	383,578	848,587	86,989
1900	3,338,431	541,661	1,021,258	102,330
1901	5,208,740	837,964	1,039,392	88,348
1902	3,915,875	636,160	1,093,653	111,443
1903	4,271,703	707,346	1,382,304	151,362
1904	3,948,594	660,620	1,172,130	107,836
1905	4,160,956	769,591	1,201,382	127,346
1906	6,451,694	1,182,502	1,501,729	195,244
1907	4,816,244	1,048,538	1,408,310	168,997
1908	5,786,942	1,216,975	1,488,675	183,294
1909	5,616,427	1,208,187	1,451,823	163,330
1910	6,905,759	1,537,613	923,258	99,250
1911	7,638,416	1,715,982	560,725	70,090
1912	7,285,043	1,834,876	536,618	69,760

(For years 1913 to 1920 see tables below.)

	(Creamery butter only). Pounds	Price per Pound	Value	(Dairy butter only). Pounds	Price per Pound	Value
1913	3,929,662	27.5	$1,080,646	4,288,276	23.9	$1,023,722
1914	4,761,355	26.5	1,261,750	3,889,000	22.5	875,025
1915	5,839,667	29.	1,693,503	4,150,444	23.	958,185
1916	6,574,510	31.	2,038,098	4,423,289	25.2	1,115,995
1917	7,526,356	38.5	2,897,647	3,979,515	31.2	1,241,859
1918	8,450,132	45.	3,802,559	*9,703,337	37.	3,590,234
1919	8,256,711	54.	4,458,623	10,804,225	44.	4,753,859
1920	7,666,802	55.	4,216,741	9,540,281	43.	4,102,320

*Previous to 1918 estimates as to dairy butter covered only quantities marketed. From 1918 onward the estimates have been on the basis of total production.

CHEESE

(For years prevous to 1913 see second preceding table.)

	Pounds	Price per Pound	Value		Pounds	Price per Pound	Value
1913	400,496	13.	$ 52,064	1917	1,093,887	20.2	220,935
1914	471,355	14.	65,989	1918	973,612	21.8	212,247
1915	726,725	15.	109,008	1919	679,855	26.4	179,481
1916	880,728	18.	158,531	1920	226,229	27.	61,081

NUMBERS OF LIVE STOCK IN THE PROVINCE

(June estimate).

Year	Horses all ages	Cattle all ages	Sheep all ages	Pigs all ages	Year	Horses all ages	Cattle all ages	Sheep all ages	Pigs all ages
1893..	88,000	173,250	35,400	50,700	1907..	173,212	463,862	14,442	118,243
1894..	88,689	193,996	35,430	68,367	1908..	169,905	409,785	16,925	120,364
1895..	91,194	192,525	35,766	59,457	1909..	189,132	372,520	17,922	155,541
1896..	95,140	210,507	33,812	72,562	1910..	232,725	397,261	32,223	176,212
1897..	100,274	221,775	33,680	74,944	1911..	251,572	407,611	37,227	192,386
1898..	101,836	227,097	32,053	69,648	1912..	273,395	429,274	42,085	216,640
1899..	102,655	220,248	33,092	66,011	1913..	300,753	456,936	52,142	248,254
1900..	118,629	237,560	25,816	77,912	1914..	325,207	498,040	75,100	325,416
1901..	142,080	263,168	22,960	94,680	1915..	329,994	631,005	76,577	286,433
1902..	146,590	282,343	20,518	95,598	1916..	341,496	665,686	89,475	261,774
1903..	161,250	310,577	22,569	105,157	1917..	419,006	669,082	146,776	375,597
1904..	143,386	306,943	18,228	118,936	1918..	384,772	746,899	136,782	284,596
1905..	157,724	319,290	18,508	104,113	1919..	379,356	781,771	167,170	261,542
1906..	164,444	363,202	16,606	120,838	1920..	356,628	757,974	156,716	212,542

NUMBERS OF POULTRY—(All Ages).

(June estimate).

Year	Hens and Chicks all ages	Turkeys all ages	Geese all ages	Ducks all ages
1918	2,122,928	128,440	51,103	51,552
1919	2,429,908	157,518	61,025	82,715
1920	3,100,000	145,000	64,500	64,000

LAND PREPARED FOR FOLLOWING YEAR'S CROP

Year	Breaking acres	Summer Fallow acres	Fall Plowing acres
1912	232,945	1,016,575	695,763
1913	155,942	1,144,405	1,581,821
1914	175,336	1,208,394	2,733,885
1915	193,144	1,094,514	1,509,002
1916	90,113	1,235,052	1,846,661
1917	105,897	1,381,308	1,900,000
1918	182,400	1,475,100	1,834,800
1919	196,200	1,350,700	1,833,500
1920	188,200	1,410,000	2,730,000

VALUE OF FARM BUILDINGS ERECTED IN EACH YEAR

1892	$1,000,000	1902	$2,228,875	1912	$3,380,345
1893	1,050,540	1903	2,961,752	1913	2,966,125
1894	725,534	1904	2,950,710	1914	3,387,395
1895	792,640	1905	3,944,101	1915	2,926,505
1896	675,315	1906	4,515,085	1916	2,623,334
1897	935,310	1907	1,735,825	1917	2,619,015
1898	1,469,740	1908	2,054,490	1918	4,144,000
1899	1,402,300	1909	2,589,780	1919	5,799,000
1900	1,351,000	1910	3,546,539	1920	5,640,000
1901	1,434,880	1911	3,273,487		

MONTHLY DISTRIBUTION OF PRECIPITATION

As recorded at Manitoba Agricultural College, Winnipeg.

(Snow estimated on basis of 10 inches equal to 1 inch rainfall.)

Month	1915 inches	1916 inches	1917 inches	1918 inches	1919 inches	1920 inches	Normal inches
January	.3	3.1	.64	1.15	.18	.53	.98
February	1.04	.7	.16	.24	.62	.59	.67
March	.20	2.0	.26	.78	.8	.44	1.21
April	1.34	.76	.48	1.45	.92	.625	1.44
May	1.35	2.87	.02	.84	1.88	1.95	1.87
June	3.10	3.68	1.58	3.49	4.65	3.45	3.59
July	1.33	4.34	2.20	1.91	4.14	.76	3.26
August	.4	1.54	2.19	2.82	2.52	1.45	2.05
September	3.7	2.02	1.25	.54	4.11	4.91	2.00
October	1.14	4.79	2.44	.86	.58	.26	1.33
November	1.8	.11	.22	1.22	2.31	1.24	1.14
December	.98	1.64	.94	.64	.21	.71	.75
Totals	16.68	27.55	12 38	15.94	22.92	16.92	20.29

Two Very Important Sources of Manitoba's Wealth

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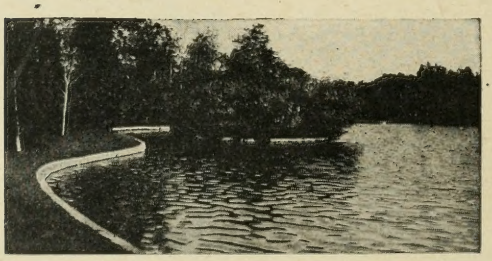
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